

**EPA Superfund
Record of Decision:**

**PORTSMOUTH NAVAL SHIPYARD
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KITTERY, ME
08/29/2001**

**RECORD OF DECISION
FOR
OPERABLE UNIT 3**

**PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE**

AUGUST 2001

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
ACRONYMS AND ABBREVIATIONS	iii
GLOSSARY	v
1.0 DECLARATION FOR THE RECORD OF DECISION	1-1
1.1 SITE NAME AND LOCATION	1-1
1.2 STATEMENT OF BASIS AND PURPOSE	1-1
1.3 ASSESSMENT OF OU3	1-1
1.4 DESCRIPTION OF THE SELECTED REMEDY	1-2
1.5 STATUTORY DETERMINATIONS	1-4
1.6 ROD DATA CERTIFICATION CHECKLIST	1-4
1.7 AUTHORIZING SIGNATURES AND SUPPORT AGENCY ACCEPTANCE OF REMEDY	1-6
2.0 DECISION SUMMARY	2-1
2.1 SITE NAME, LOCATION, AND DESCRIPTION	2-1
2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES	2-1
2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION	2-5
2.4 SCOPE AND ROLE OF OPERABLE UNIT 3	2-7
2.5 SITE CHARACTERISTICS	2-9
2.6 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES	2-11
2.7 SUMMARY OF SITE RISKS	2-12
2.7.1 Human Health Risk	2-12
2.7.2 Ecological Risk	2-16
2.7.3 Chemicals Of Concern	2-16
2.8 REMEDIAL ACTION OBJECTIVES	2-20
2.9 DEVELOPMENT AND SCREENING OF ALTERNATIVES	2-21
2.10 DESCRIPTION OF ALTERNATIVES	2-22
2.11 COMPARATIVE ANALYSIS OF ALTERNATIVES	2-26
2.12 SELECTED REMEDY	2-30
2.13 STATUTORY DETERMINATIONS	2-35
2.14 DOCUMENTATION OF SIGNIFICANT CHANGES FROM PREFERRED ALTERNATIVE OF PROPOSED PLAN	2-36
2.15 STATE ROLE	2-37
3.0 RESPONSIVENESS SUMMARY	3-1
REFERENCES	R-1

TABLE OF CONTENTS (CONT.)

APPENDICES

A	MEDEP LETTER OF CONCURRENCE AND ADMINISTRATIVE RECORD INDEX FOR OU3
A.1	MEDEP LETTER OF CONCURRENCE
A.2	ADMINISTRATIVE RECORD INDEX
B	COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD
B.1	ORAL COMMENTS
B.2	WRITTEN COMMENTS
C	OU3 ARARs AND COST ESTIMATE TABLES
C.1	ARARs
C.2	COST ESTIMATES

TABLES

Number

2-1	Summary of Cancer Risks, Hazard Indices, and Lead Modeling Results (RME) for OU3	2-39
2-2	Summary of Chemicals of Concern and Medium Specific Exposure Point Concentrations (RME)	2-42
2-3	Cancer and Non-Cancer Toxicity Data Summary for OU3 COCs	2-44
2-4	Summary of Comparative Analysis of Alternatives for OU3	2-48

FIGURES

Number

2-1	Great Bay Estuary and Portsmouth Naval Shipyard Location	2-49
2-2	AOC and IRP Locations	2-51
2-3	Operable Unit 3 Layout Map	2-53
2-4	RFI and RFI Data Gap Sample Location Map, Operable Unit 3	2-55
2-5	February/March 2000 Test Pit Locations, Operable Unit 3	2-57
2-6	Conceptual Areas of Capping and Shoreline Erosion Controls, Operable Unit 3	2-59
2-7	Conceptual Cap Cross Sections Under Alternative 3, Operable Unit 3	2-61

ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chemical of Concern
CSF	Cancer Slope Factor
DOD	Department of Defense
DQO	Data Quality Objective
EERA	Estuarine Ecological Risk Assessment
EPC	Exposure Point Concentration
FCS	Final Confirmation Study
FFA	Federal Facility Agreement
FS	Feasibility Study
GCL	geosynthetic clay liner
GIS	Geographical Information System
HHRA	Human Health Risk Assessment for Offshore Media
HI	Hazard Index
HSWA Permit	Corrective Action Permit under the RCRA Hazardous and Solid Waste Amendments of 1984
IAS	Initial Assessment Study
ILCR	Incremental Lifetime Cancer Risk
IRP	Installation Restoration Program
JILF	Jamaica Island Landfill (Site 8)
LDPE	low-density polyethylene
MB	Mercury Burial Site (MBI or MBII, Site 9)
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MEDEP	Maine Department of Environmental Protection
MEG	Maximum Exposure Guideline
Navy	United States Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAHs	Polycyclic Aromatic Hydrocarbons

PCBs	Polychlorinated Biphenyls
PHERE	Public Health and Environmental Risk Evaluation
PNS	Portsmouth Naval Shipyard
PRAP	Proposed Remedial Action Plan (also referred to as Proposed Plan)
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RFI	RCRA Facility Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
SAPL	Seacoast Anti-Pollution League
SARA	Superfund Amendments and Reauthorization Act
SWMU	Solid Waste Management Unit
TAG	Technical Assistance Grant
TBC	To-be-considered
TRC	Technical Review Committee
USEPA	United States Environmental Protection Agency

GLOSSARY

Applicable or Relevant and Appropriate Requirement (ARARs): The Federal and state environmental rules, regulations, and criteria that must be met by the selected remedy under CERCLA.

Applicable Requirement: Cleanup standards, environmental protection requirements, criteria, or limitations promulgated under Federal or more stringent state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law passed in 1980 and amended by Congress by the Superfund Amendments and Reauthorization Act of 1986. Pursuant to CERCLA Section 120, the Navy is responsible for investigating and conducting response actions to address releases and threatened releases of hazardous substances at or from the Portsmouth Naval Shipyard. This law established a national trust fund (known as Superfund) to investigate and remediate abandoned or uncontrolled hazardous waste sites.

Cover: A layer of clay and/or other impermeable materials installed over the top of a closed landfill designed to serve as a barrier to surface receptors and/or to prevent infiltration of water and minimize leachate.

Data Quality Objective (DQO) Process: Developed by USEPA, it is a logical process that assists with identifying the objectives of environmental investigation work, the necessary sampling and testing requirements, and the evaluation and decisions that will be made once the data are collected. The final output of the DQO process is the investigation work plan.

Feasibility Study (FS): A report that develops and analyzes potential remedial action goals and cleanup alternatives for a CERCLA site based on information collected as part of remedial investigations.

Hazard Index (HI): A measure of the potential for toxic (non-cancer related) effects from exposure to non-carcinogenic chemicals. An HI of 1 or less is considered an acceptable risk level by the USEPA and MEDEP.

Incremental Lifetime Cancer Risk (ILCR): The incremental increase in the probability of developing cancer during one's lifetime from exposure to carcinogenic chemicals in addition to the background probability of developing cancer. The USEPA target risk goal is between 10^{-6} (1 in a million) to 10^{-4} (1 in ten thousand) incremental chance of cancer risk. Cancer risk below or within the risk goal is considered an acceptable risk level by the USEPA. The MEDEP risk guideline is 10^{-5} (1 in one hundred thousand).

incremental chance of cancer risk. Cancer risk below the risk guideline is considered an acceptable risk level by the MEDEP.

Management of Migration: Actions that are taken to minimize and mitigate the migration of hazardous substances and the effects of such migration. Management of migration of groundwater from OU3 (i.e., the soil and groundwater within the Jamaica Island Landfill boundary) to the offshore is being addressed as part of OU6.

Operable Unit (OU): Term for each of a number of separate remedial activities undertaken as part of a Superfund site cleanup. Sites with similar characteristics or in near proximity may also be grouped as one OU.

Principal Threat Wastes: Source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner and/or would present a significant risk to human health or the environment should exposure occur.

Proposed Remedial Action Plan (PRAP) or Proposed Plan: A plan for site cleanup that is made available to the public for comment.

Record of Decision (ROD): An official document that describes the selected remedial action for a site under CERCLA.

Remedial Investigation (RI): A summary report of the information collected on the nature and extent of contamination and the problems that the contamination could potentially cause (including assessment of human health and ecological risks) at a CERCLA site.

Relevant and Appropriate Requirements: Cleanup standards, environmental protection requirements, criteria, or limitations promulgated under Federal or more stringent state law that, while not "applicable," do address problems or situations sufficiently similar (relevant) to those encountered at the CERCLA site, that their uses is well suited (appropriate) to the particular site.

Resource Conservation and Recovery Act (RCRA): A Federal act that gives USEPA the authority to develop a nationwide program to regulate hazardous waste from "cradle to grave." Enacted in 1976, the act was established to "protect human health and the environment from the improper handling of solid waste and encourage resource conservation."

Risk Assessment: Evaluation of current and future potential for adverse human health or environmental (ecological) effects from exposure to chemicals.

Sediment: Soil, sand, and material typically transported by erosion from soil to the bottom of surface water bodies, such as streams, rivers, ponds, and lakes.

Source Control: Action including the construction or installation and start-up of those actions necessary to prevent the continued release of hazardous substances (primarily from a source on top of or within the ground, or in buildings or other structures) into the environment. OU3 addresses source control for the soil and groundwater within the boundary of the JILF, where soil within the boundary of the JILF includes the waste materials placed in the landfill.

Surface Water: Water from streams, rivers, ponds, and lakes. For this ROD, surface water means water of the Piscataqua River.

To-be-considered (TBC) Criteria: Non-promulgated, non-enforceable guidelines or criteria that may be useful for determining what are protective of human health and environment.

1.0 DECLARATION FOR THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION

Operable Unit 3 (OU3)
Soil and Groundwater within the Jamaica Island Landfill (JILF) Boundary
Portsmouth Naval Shipyard (PNS)
Kittery, Maine.

1.2 STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for soil and groundwater within the boundary of the JILF (OU3) at PNS, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for this site, which was developed in accordance with Section 113(k) of CERCLA, and which is available for review in the Information Repositories at the Kittery Town Hall in Kittery, Maine, and the Portsmouth Public Library in Portsmouth, New Hampshire. The Administrative Record Index included in Appendix A identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based.

The Maine Department of Environmental Protection (MEDEP) concurs with the selected remedy (see Appendix A). The remedy meets MEDEP's requirement for a hazardous waste landfill cover for OU3.

1.3 ASSESSMENT OF OU3

The response action selected in this Record of Decision (ROD) is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

The United States Navy (Navy) has determined that risks for future potential human exposure (without restrictions) to soil (including landfill material) within OU3 exceed acceptable levels. Risks for future potential human exposure (without restrictions) to fresh groundwater (if used for drinking) within OU3 also exceed acceptable levels; however, groundwater at OU3 is not likely to be used for drinking because a potable source of water is available and portions of OU3 have brackish/saline groundwater that is not considered potable. Implementation of the selected remedy for OU3 will minimize future exposure to soil and groundwater within the JILF boundary. No onshore ecological risks were attributed to the site.

OU3 is adjacent to the offshore operable unit (OU4) and human health and estuarine ecological risks were calculated for the offshore. Based on the evaluation of these risks as part of the Interim ROD for OU4, interim offshore monitoring is being conducted. However, management of migration of OU3 groundwater to the offshore will be addressed as part of OU6 (the management of migration operable unit for the JILF) and is not addressed by the ROD for OU3.

1.4 DESCRIPTION OF THE SELECTED REMEDY

The selected remedy for OU3 includes a hazardous waste landfill cover, institutional controls, erosion controls, and monitoring. The following components are necessary to address soil and groundwater contamination within the boundary of the JILF:

- A multiple layer cover over the landfill surface that would prevent receptors on the surface from coming in contact with contaminated soil and/or waste and minimize infiltration of water through the cover to the landfill material. Portions of the JILF that have buildings and structures will not be covered under the hazardous waste landfill cover. The specific cover components will be determined as part of the cover design, based on pre-design investigation, as necessary.
- Institutional controls to restrict land and fresh water groundwater uses within the JILF boundary to prevent unacceptable human exposure to site contaminants. Institutional controls will also be used to prevent unrestricted disturbance of the hazardous waste landfill cover, shoreline erosion controls, and buildings and structures within the boundary of the JILF.
- Shoreline erosion controls, including rip-rap and/or wetlands placed along the shoreline, to minimize the potential for washing away of soil and/or waste materials from the edge of the JILF.
- Monitoring of site media to assess the effectiveness of the remedy over the long term. The appropriate media for monitoring, frequency, testing protocol, and evaluation criteria will be determined as part of the monitoring program development and will be documented in the monitoring plan.
- Routine inspections and maintenance of the cover, shoreline erosion controls, and institutional controls to ensure that the cover, erosion controls, and site controls remain effective. An operation and maintenance plan will be developed. The operation and maintenance plan will include identification of verification activities to determine whether the buildings and structures within the JILF boundary are still in place.

- Five-year site reviews to confirm that remedial action objectives (RAOs) are being achieved and the remedy remains protective.

The selected remedy addresses source control for the JILF (i.e., OU3). Management of migration of groundwater from within the JILF boundary to the offshore will be addressed as part of OU6. In addition, the offshore areas potentially impacted by PNS onshore sites, which include the area adjacent to OU3 in the estuary, are being addressed as part of OU4. However, based on comments received from the MEDEP on the schedule for OU6 and the concerns raised by the public during the comment period on the Proposed Remedial Action Plan (PRAP) for OU3, the Navy, in consultation with the United States Environmental Protection Agency (USEPA) and MEDEP, has agreed to incorporate the following activities related to OU6 into the ROD for OU3:

- Initiate development of a work plan for the additional investigation for OU6 by holding a Data Quality Objective (DQO) meeting within 60 days of signing of the ROD for OU3.
- Complete the work plan for the additional investigation for OU6 by the time the JILF cap construction is complete.
- Evaluate the possibility of wetlands construction specifically for water quality improvement to address groundwater migration from the JILF.

In addition to the items specifically associated with OU6, the Navy will re-evaluate the feasibility of consolidation of portions of the landfill (in the Jamaica Cove area and the vicinity of the former location of Mercury Burial Site II) into the existing landfill. The evaluation relates to both OU3 and OU6 and will be conducted as part of the pre-design investigation and cap design for OU3. Removal of waste material in the vicinity of Jamaica Cove could provide the additional benefits of removing landfill material from a tidal influenced area and provide additional area for construction of wetlands. Removal of waste material in the former Mercury Burial Site II area is being considered so that the Navy can locate the discharge from the two freshwater ponds that is believed to enter the landfill in this area and redirect this discharge away from the landfill, thus reducing the amount of groundwater flowing into this portion of the landfill. Removal of waste material from both areas and consolidation in the remaining landfill area would reduce the extent of the hazardous waste landfill cover.

These activities related to OU6 are enforceable components of this ROD for OU3; a full enforceable schedule for subsequent activities related to OU6 will be incorporated in the Amended Site Management Plan as necessary.

Based on available site data, the majority of the landfill materials are nonprincipal threat wastes (i.e., fill materials present at OU3 do not meet the USEPA definition of principal threat waste). However, the selected remedy will address principal threat waste, if present in the landfill, by providing a cover to minimize infiltration of water through the landfill material and to prevent direct contact with site materials.

1.5 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The remedy for OU3 does not satisfy the statutory preference for treatment as a principal element of the remedy. This is because OU3 is a large (approximately 25 acres) heterogeneous landfill that ceased landfill operations before 1980, and the chemistry data for soil and groundwater for OU3 indicate low to moderate concentrations of a mixture of chemicals (organic and inorganic) dispersed throughout the landfill area. Therefore, the Navy has concluded, and USEPA and MEDEP concur, that treatment options as a principal element of the remedy are not practicable for the landfill size or for the mixture of landfill material.

A review will be conducted within five years after initiation of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment because this remedy will result in hazardous substances remaining on-site exceeding levels that allow for unlimited use and unrestricted exposure. Subsequent five-year site reviews will be conducted as long as hazardous substances remain on-site exceeding levels that allow for unlimited use and unrestricted exposure.

1.6 ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record file for this OU.

- Chemicals of concern (COCs) and their respective concentrations.
- Baseline risk represented by the COCs.
- Cleanup levels established for COCs and the basis for these levels.
- Current and future land and groundwater use assumptions used in the baseline risk assessment and ROD.

- Land and groundwater use that will be allowed at the site as a result of the selected remedy.
- Estimated capital, operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.
- Decisive factor(s) that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision).

1.7 AUTHORIZING SIGNATURES AND SUPPORT AGENCY ACCEPTANCE OF REMEDY

This ROD documents the selection of remedial action for OU3 (soil and groundwater within the boundary of the JILF) at PNS. The foregoing represents the selection of a remedial action by the Navy and the USEPA, Region I, with the concurrence of the MEDEP.

Concur and recommend for immediate implementation:

Department of the Navy

By 

V.T. Williams

Captain, USN

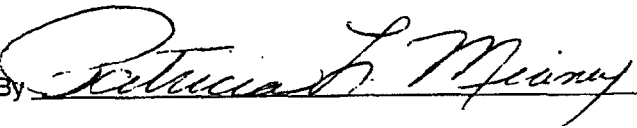
Commander

Portsmouth Naval Shipyard, Kittery, Maine

Date 17 AUG 2001

Concur and recommend for immediate implementation:

United States Environmental Protection Agency, Region 1

By _____

Date 8/29/01

Patricia L. Meaney

Director

Office of Site Remediation and Restoration

Region I

Boston, Massachusetts

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

Operable Unit 3 (OU3) is located in the eastern portion of Portsmouth Naval Shipyard (PNS), Kittery, Maine. The United States Navy (Navy) is the lead agency for cleanup of this site.

PNS is located on an island in the Piscataqua River, referred to on National Oceanic and Atmospheric Administration (NOAA) nautical charts as Seavey Island, with the eastern tip given the name Jamaica Island. Attached by a rock causeway is Clark's Island, which is not industrialized. The Piscataqua River is a tidal estuary that forms the southern boundary between Maine and New Hampshire. PNS is located at the mouth of the Great Bay Estuary (commonly referred to as Portsmouth Harbor). The locations of the Great Bay Estuary and PNS are shown on Figure 2-1 (provided at the end of Section 2.0).

OU3 is approximately 25 acres in size and it consists of the soil (including landfill material) and groundwater within the following sites: Site 8 – the Jamaica Island Landfill (JILF); Site 9 – the Former Mercury Burial Sites (MBI and MBII); and Site 11 – the Former Waste Oil Tanks Nos. 6 and 7. Sites 9 and 11 are located within the boundary of the JILF. The site locations are shown on Figure 2-2 (provided at the end of Section 2.0). The layout of OU3 is shown on Figure 2-3 (provided at the end of Section 2.0).

A more detailed description of the OU can be found in Section 1.0 of the Feasibility Study Report for Operable Unit 3 (TtNUS, November 2000a).

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

PNS is engaged in the conversion, overhaul, and repair of submarines for the Navy. The long history of shipbuilding in Portsmouth Harbor dates back to 1690, when the first warship launched in North America, the *Falkland*, was built. PNS was first established as a government facility in 1800, and it served as a repair and building facility for ships during the Civil War. The first government-built submarine was designed and constructed at PNS during World War I. A large number of submarines have been designed, constructed, and repaired at this facility from 1917 to the present. PNS continues to service submarines as its primary military focus.

Years of shipbuilding and submarine repair work at PNS have resulted in the release of hazardous substances into the soils, groundwater, surface water, and sediment on and around Seavey Island. As a result, investigations and remedial activities have been performed under the Department of Defense (DOD) Installation Restoration Program (IRP). The IRP is designed to identify contamination of DOD

facilities and lands resulting from past operations, to investigate the extent and severity of contamination, and to institute corrective measures. The IRP parallels the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and is further discussed in the Community Relations Plan for PNS (B&R Environmental, 1996).

Investigations of hazardous waste contamination at PNS began in 1983. The United States Environmental Protection Agency (USEPA) became involved with PNS in 1985, under the authority of the Resource Conservation and Recovery Act (RCRA). Since 1988 the Maine Department of Environmental Protection (MEDEP) has also provided oversight of investigation and remediation at PNS. In March 1989 the USEPA issued a Corrective Action Permit under the RCRA Hazardous and Solid Waste Amendments of 1984 (HSWA Permit) (USEPA, 1989) that required PNS to investigate 13 solid waste management units (SWMUs) and take appropriate corrective action. However, effective May 31, 1994, PNS was included on the National Priorities List (NPL). The subsequent studies have been conducted under the authority of CERCLA, commonly known as Superfund. Consistent with the transition from RCRA to CERCLA, the SWMU terminology was replaced with "site." In addition, the sites identified in the HSWA Permit as well as several newly identified sites have been grouped, based on similar characteristics or proximity, into six OUs. Four OUs (OU1, OU2, OU3, OU5) address onshore contamination from IRP sites, whereas OU4 addresses offshore contamination from the IRP sites. OU6 addresses management of migration of groundwater from OU3.

The Federal Facility Agreement (FFA) for PNS between the USEPA and the Navy became effective February 2000 and the FFA supersedes the HSWA Permit. The State of Maine has elected not to be a party to the FFA at this time. However, the State is afforded a participatory role in the site remediation (i.e., CERCLA) process by virtue of CERCLA. Among other things, an FFA outlines roles and responsibilities, establishes deadlines/schedules, outlines work to be performed, and provides a dispute resolution process for primary documents. The FFA ensures CERCLA decisions will be consistent with RCRA and other Federal and state hazardous waste statutes and regulations as appropriate for the sites at PNS.

As part of the Navy's IRP and its predecessor, the Navy Assessment and Control of Installation Pollutants Program, various environmental investigations have been conducted at PNS beginning with the Initial Assessment Study (IAS) (Weston, 1983), conducted in 1983, that identified and assessed sites posing a potential threat to human health and the environment. The final phase of this study was completed in 1986 with the issuance, of a Final Confirmation Study (FCS), (LEA, 1986), which evaluated the sites identified in the IAS to confirm the presence of contamination. In accordance with the HSWA Permit requirements, a RCRA Facility Investigation (RFI) was performed. The RFI consisted of several phases of investigations spanning from October 1989 to February 1992 and the results of the RFI were

assembled into the RFI Report (McLaren/Hart, July 1992). The RFI "Approval with Conditions" was issued by the USEPA in March 1993 and the Addendum to the RFI report (McLaren/Hart, 1993) was prepared to address the requirements of the "Approval with Conditions" to the extent possible. Several requirements needed additional field investigation, which was conducted as part of the RFI Data Gap field work. The results of the field work are provided in the RFI Data Gap Report (Halliburton NUS, 1995) and are considered supplemental to the RFI report. Four rounds of groundwater monitoring and seep and sediment sampling were conducted from 1996 to 1997 (Rounds 7 through 10 sampling). A summary of the groundwater monitoring and a summary of the seep/sediment sampling are provided in the Groundwater Monitoring Summary Report (TtNUS, August 1999) and the Seep/Sediment Summary Report (TtNUS, August 2000), respectively. Remedial investigations of two sites (Sites 10 and 29) and Site Screening Investigations of three sites (Sites 30, 31, and 32) were conducted in the summer of 1998. The results of these investigations are provided in the Field Investigation Report Site 10 (Building 238) and Site 29 (Teepee Incinerator) (TtNUS, March 2000) and Field Investigation Report Site 30 (Building 184), Site 31 (West Timber Basin), and Site 32 (Topeka Pier) (TtNUS, May 2000b).

A risk assessment of onshore media (e.g., soil and groundwater) was conducted using the analytical data collected during the RFI and the results are provided in the Public Health and Environmental Risk Evaluation: Part A Human Health Risk Assessment (PHERE) (McLaren/Hart, March 1994). The offshore area was investigated and risks evaluated as part of the Estuarine Ecological Risk Assessment (EERA) (NCCOSC, 2000) and the Offshore Human Health Risk Assessment (HHRA) (McLaren/Hart, May 1994). Human health risk assessments for OU2 and 003 (Revised OU2 Risk Assessment, TtNUS, November 2000b and Revised OU3 Risk Assessment, TtNUS, May 2000a, respectively) were conducted in 2000 using RFI, RFI Data Gap, 1998 field investigation results, and 1996/1997 groundwater monitoring data, as appropriate.

Contaminant fate and transport modeling was conducted for OU2, OU3, and OU5 to estimate the potential for chemicals in the soil and groundwater in these operable units to migrate to the offshore and adversely impact the surface water and sediment in the offshore areas of PNS (TtNUS, December 1999).

Interim offshore monitoring of OU4 (offshore areas) is currently being conducted in accordance with the Interim Offshore Monitoring Plan (TtNUS, October 1999) as required by the Interim Record of Decision (ROD) for OU4 (Navy, 1999).

Site 8 is the JILF, which was tidal mudflats that the Navy used as a disposal area for various industrial wastes from 1945 to 1978. In 1978, approximately 100,000 cubic yards of dredged sediment from the Shipyard's Berths 6, 11, and 13 were deposited at the JILF (covering approximately 9 acres corresponding with the area within the running track) per a permit issued by the Army Corps of Engineers.

A new dike was designed and constructed to contain these dredge spoils and to prevent post-construction seepage and run-off into the adjacent Piscataqua River. A 2-foot thick clay cover was placed on the dredge spoils to minimize infiltration of rainfall.

An area referred to as the JILF Impact Area (encompassing the Former Child Development Center) was investigated as part of the RFI to ensure that the children at the center were not being exposed to soil contaminated by wind dispersal of contamination from the JILF. The area is located southwest of the JILF (southeast of GW-1 and northwest of Building 341). The center has since been moved to a different location, the building and playground equipment have been removed, and the area regraded and vegetated. The area is not currently used and there are no current planned uses for the area. As part of the Feasibility Study for Operable Unit 3, it was determined that because of the nature and extent of contamination and the activities conducted to date at the JILF Impact Area, the remedy for OU3 would not include the JILF Impact Area. Additional investigation of the JILF Impact Area will be conducted separately.

Site 9, Former Mercury Burial Sites I and II (MBI and MBII), is located within the boundary of the JILF. The burial sites consisted of poured concrete blocks and a precast concrete pipe (also referred to as concrete vaults) containing mercury-contaminated wastes that were reportedly buried between 1973 and 1975 at two locations. The concrete vaults at MBI and MBII have been removed (portions of MBI in 1994 and the rest in 1997 and MBII in 2000). All the contents of MBI and MBII were disposed of properly at a licensed offsite disposal facility and no exceedances of regulatory criteria for mercury were found in the excavated soil. The area was backfilled and seeded (Halliburton NUS, 1995; FWENC, 1997; FWENC, 2000).

Site 11, Former Waste Oil Tanks Nos. 6 and 7, was used from 1943 to 1989 to store waste oils from facility shops before offsite disposal. The types of waste oils included cooling and cutting oils, motor oils, transmission oils, and hydraulic oils. Some of the waste oils may have contained metals. It is possible that degreaser solvents labeled as waste oils and Freon may also have been stored in the tanks. Twice before removal from service (in 1979 and 1986), the tanks were evaluated and determined to be sound. When the tanks were removed from service in 1989, the tanks were excavated and again found to be sound. PNS and the MEDEP collected soil samples and found elevated levels of lead and other contaminants. The contamination was believed to occur from spills during filling of the tanks. The tanks were removed and disposed of offsite. At that time, 332 tons of surrounding contaminated soil were also excavated and disposed of offsite.

During 1989 to 1992, as part of the RFI, surface and subsurface soil, groundwater (bailer sampling method), and seep samples were collected from the sites within OU3. During the RFI Data Gap

investigation conducted in 1994, hydrogeology and tidal influences were further investigated. In 1996/1997, four rounds of groundwater monitoring (using low-flow sampling method) were conducted for the OU3 monitoring wells. Figure 2-4 shows the sampling locations (provided at the end of Section 2.0).

Test pitting within portions of the JILF was conducted in 2000 at 25 locations, selected based on a survey for buried metallic objects, to investigate the possibility of the presence of a large number (nearly 10,000) of 55-gallon (or similar capacity) drums reportedly buried above the water table in the landfill between 1945 and 1965. Test pits were not included in the MBII area or within the capped area of the landfill. Forty-one drums containing non-hazardous material were located and 40 of these drums were removed from one location and disposed of offsite and one of these drums, containing a Portland cement type material, from another location was replaced in the landfill. Subsurface soil samples were collected as part of the investigation (TtNUS, October 2000). Figure 2-5 shows the test pit locations (provided at the end of Section 2.0).

Section 1.0 of the Feasibility Study Report for Operable Unit 3 (TtNUS, November 2000a) provides additional details on the site history and enforcement activities for OU3. In addition, the Feasibility Study Report for Operable Unit 3 provides the identification and evaluation of alternatives to address soil and groundwater within the boundary of the JILF (i.e., source control) and the management of migration of groundwater offshore of the JILF. The Navy, USEPA, and MEDEP decided to finalize the OU3 FS without addressing the separation of source control (OU3) and management of migration (OU6) for the JILF. The Navy prepared an OU3 FS Clarification Memorandum (Navy, 2000) that discusses the decision to separate the operable units and the impact on the OU3 FS. The Proposed Remedial Action Plan (PRAP) for OU3 (Navy, January 2001) was prepared for public comment to indicate the Navy's preliminary proposed remedy for source control for the JILF.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Community relations activities for PNS began as early as August 1986 when the first public information workshop was held regarding environmental restoration work at the PNS. In addition to community workshops, a Technical Review Committee (TRC) organized meetings beginning in December 1987 and on an as-needed basis thereafter to provide an opportunity for the technical experts performing environmental investigations to meet with appointed citizens and PNS personnel to discuss and solicit community input on the technical progress and interim findings of the investigations. The TRC evolved into a Restoration Advisory Board (RAB) with the inclusion of additional community members in 1995. The RAB generally meets every two months. The RAB provides the forum for discussion and exchange of information between the Navy, regulatory agencies, and the community on environmental restoration activities, and it provides an opportunity for individual community members to participate in the decision-making process and provide input to the decision makers for various IRP sites, including OU3. A local

citizen's group (the Seacoast Anti-Pollution League or SAPL) receives a Technical Assistance Grant (TAG) funded by USEPA to help citizens acquire technical advisors to help them understand proposed cleanup remedies, to better understand the technical problems at the site, and to respond to CERCLA actions. The PNS Public Affairs Office has interviewed members of the public in Seacoast communities to establish a baseline of the public's knowledge and concerns about the PNS IRP and enhance open communications on topics of public concern. Details of the history, objectives, and implementation techniques of community relations activities at the PNS can be found in the Community Relations Plan (B&R Environmental, 1996).

The Navy has provided presentations of the results of the various investigations and evaluations conducted for OU3 or the sites within OU3 at various RAB meetings. The minutes from these meetings are provided to the RAB members. In addition, updates on each RAB are mailed to the PNS IRP mailing list. Technical documents are distributed to the RAB members for review and comment and RAB members are invited to attend all technical meetings related to these documents. Minutes for technical meetings are prepared and distributed to the RAB members. In addition, copies of the minutes, RAB updates, and final documents are included in the PNS Information Repositories at the Kittery Town Hall, Kittery, Maine and the Portsmouth Public Library, Portsmouth, New Hampshire. All documents that support the selection of the remedy for OU3 are available for public review in the Information Repositories.

In addition to RAB participation, specific community outreach efforts for the recommendation and selection of a remedy for OU3 are as follows:

- A notice of availability of the PRAP for OU3 and documents related to OU3 was published on January 22 and 30, 2001 in the *Portsmouth Herald* and in *Foster's Daily Democrat*. The notice also announced the documents were available to the public in the PNS Information Repositories; and the dates for the 30-day public comment period, the Informational Open House, and the Public Hearing.
- The Navy held the 30-day public comment period for the PRAP for OU3 from January 31, 2001 through March 1, 2001. Written comments were accepted during the comment period via mail or fax, at the Informational Open House, and at the Public Hearing.
- The Navy held an Informational Open House on February 1, 2001 to provide a forum for the Navy to respond to public questions and concerns about the proposed cleanup remedy. Written comments were accepted at the Informational Open House.

- The Public Hearing was held on February 22, 2001 at which the Navy accepted oral public comments.
- Subsequent to the public comment period, in response to public concerns related to human health and the environment from separation of OU3 and OU6, the Navy prepared a fact sheet and distributed the fact sheet to the PNS IRP mailing list (which includes the community members who attended the Informational Open House and Public Hearing, as well as RAB members, and other people requesting to be included on the mailing list).

The transcript for the public comments received at the Public Hearing and the written comments received during the public comment period are provided in Appendix B. Responses to significant comments received during the public comment period are provided in the Responsiveness Summary in Section 3.0.

2.4 SCOPE AND ROLE OF OPERABLE UNIT 3

As with many Superfund sites, the issues at the PNS IRP sites are complex. As a result, the Navy has divided the analysis and cleanup of PNS IRP sites into manageable portions, called Operable Units (OUs). There are currently six OUs at PNS as follows (see Figure 2-2 for OU and associated site locations):

- OU1 and OU2 are onshore sites at PNS that are undergoing various phases of remedial investigation/feasibility study activities.
- OU3, the subject of this ROD, is the source control operable unit for the JILF. It addresses the soil and groundwater within the JILF boundary, where soil within the boundary of the JILF includes the waste materials placed in the landfill.
- OU4 is the offshore area potentially impacted by PNS onshore sites that includes the area adjacent to the JILF in the estuary. An interim ROD was signed for OU4 in May 1999 that selected monitoring of the sediment and biota as the interim remedy. Monitoring activities began in September 1999.
- OU5 only consists of one site, which is being recommended for no further action under CERCLA.
- OU6 is the management of migration operable unit for the JILF. It addresses migration of groundwater offshore of the JILF.

Before October 2000, source control and management of migration for the JILF (and the sites located within the JILF boundary) were both addressed as part of OU3. The MEDEP identified concerns related to management of migration during the development of the Feasibility Study Report for Operable Unit 3. To address these concerns without further delay of a remedy for source control for the JILF, the Navy, USEPA, and MEDEP agreed to split off management of migration for the JILF and create a new operable unit, OU6. The Feasibility Study Report for Operable Unit 3 was near completion and it was further agreed that the report would be finalized without updating the document to reflect the separation of source control and management of migration. The Navy prepared the OU3 Clarification Memorandum (Navy, 2000), to explain the decision to separate the remedial action for the JILF into two OUs: OU3 and OU6 and to explain the impacts on the Feasibility Study. Based on the separation, OU3 addresses source control (i.e., soil and groundwater within the boundary of the JILF). The remedy for OU3 therefore considers the risks or impacts to human health and the environment from exposure to soil, wastes, and/or groundwater within the boundary of the JILF. Management of migration (i.e., groundwater migration offshore of the JILF) will be addressed separately as OU6.

As part of OU6, the risks or impacts to human health and the environment from the migration of groundwater from the JILF to the offshore will be considered and action as necessary to address management of migration will be determined. MEDEP concerns for migration of groundwater relate to the seeps in the intertidal area of the JILF, which are the locations where groundwater exits the JILF, flows on top of the sediment in the intertidal area, and then enters and mixes with the river water. The MEDEP expressed concern that water quality standards may have been exceeded at some of the seep locations (particularly seeps exposed above mid tide) and that organisms exposed directly to the seep water at these locations may be adversely impacted by the seep water. The concerns related to migration of groundwater will be addressed as part of OU6. Actions related to OU6 will be conducted after ROD for OU3 is signed. Several of the specific activities for OU6 are discussed as part of the remedy for OU3 and include development of an investigation program for the seeps, evaluation of wetlands construction to manage migration of groundwater, and evaluation of consolidation of portions of the landfill. However, the Navy is currently conducting interim offshore monitoring for OU4 that includes monitoring stations in the areas offshore of the JILF. Sediment, mussel, and juvenile lobster in the offshore area (including the intertidal area where the seeps are present) are being collected and tested as part of the program. The interim offshore monitoring program was designed to determine whether there are potential continued adverse impacts to the offshore area, which includes the intertidal and subtidal areas. The presence of seeps in the intertidal area was considered during the program development and it was determined that monitoring of sediment in the vicinity of the seep was a better indicator of adverse impacts because contaminants tend to accumulate in the sediment. The program was developed through the Data Quality Objective (DQO) process and the USEPA, MEDEP, NOAA, US Fish and Wildlife, and SAPL participated with the Navy in the development of the process. Therefore, data for the offshore area (that includes

OU6) are currently being collected to determine whether additional action is necessary to prevent adverse risks to the offshore area in the interim of additional investigation/evaluation to address the specific concerns related to seeps in the intertidal area of the JILF.

The JILF Impact Area was previously included as part of OU3. The area is located southwest of the JILF (southeast of GW-1 and northwest of Building 341). As part of the Feasibility Study for Operable Unit 3, it was determined that because of the nature and extent of contamination and the activities conducted to date at the JILF Impact Area, the remedy for OU3 would not include the JILF Impact Area. Additional investigation at the JILF Impact Area will be conducted separately.

Principal threats (highly mobile/high-toxicity source materials) and low-level threat (non-mobile/low to moderate toxicity source materials) that this ROD addresses are summarized in the following table. These threats were identified based on the results of the environmental investigations at OU3, which are summarized in Section 2.2:

Principal Threats	Medium	Contaminant(s)⁽¹⁾	Action To Be Taken
None	Not Applicable	None identified	Not Applicable
Low-Level Threats	Medium	Contaminant(s)⁽²⁾	Action To Be Taken
Landfill Material	Soil/Waste	Polycyclic Aromatic Hydrocarbons (PAHs), Metals	A hazardous waste landfill cover with institutional controls will be used to minimize infiltration of water through the landfill material and to prevent direct contact with site soil/waste.
Landfill Material	Fresh Groundwater	Benzene, Metals	Institutional controls will be used to prevent development of fresh groundwater for drinking water uses.

- 1 Based on available site data and risk assessment, source materials considered to be highly toxic or highly mobile that generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur have not been identified at OU3.
- 2 Contaminants listed are the chemicals of concern (COCs) identified based on the results of the human health risk assessment for OU3 (see Section 2.7 of this ROD). Other contaminants have been detected in the soil and/or groundwater at OU3; however, the actions to be taken for the contaminants listed would be the same.

2.5 SITE CHARACTERISTICS

Section 1.0 of the Feasibility Study Report for Operable Unit 3 provides a summary of the environmental investigations conducted at the sites within OU3. Sections 2.0 through 4.0 of the Feasibility Study Report for Operable Unit 3 provide information on the site characteristics, chemical concentrations in soil and

groundwater at OU3, and fate and transport of the chemicals detected. The following summarizes the characteristics of OU3 that is discussed in more detail in the Feasibility Study Report for Operable Unit 3 (TtNUS, November 2000a). The results of the test pitting in February/March 2000 at the JILF and the removal action at MBII are not discussed in the Feasibility Study Report for Operable Unit 3. The Test Pitting Investigation Report for Jamaica Island Landfill – February/March 2000 Activity (TtNUS, October 2000) provides details of the results of the 2000 test pitting at the JILF. The Removal Action Report for Mercury Burial Vault Site II (FWENC, 2001) provides details of the removal of MBII in July 2000.

The JILF is located on approximately 25 acres of land. The area was used for a landfill and it was filled from the northeast corner toward the shore in a region of mud flats that existed between original islands at the eastern portion of PNS. MBI was located within the grass-covered area of the JILF and MBII was located in a gravel/dirt-covered area in the southwestern portion of the JILF. The tanks at Site 11 were covered with asphalt and were located within a fenced area adjacent and to the west of the hazardous waste transfer facility.

The ground surface at OU3 is relatively flat with an approximate elevation of 110 feet; although, the ground surface elevation varies from 120 feet along the western boundary of OU3 to 100 feet along the shore (elevations are in reference to the PNS datum that equates the mean high water line to 100 feet). Most of OU3 is filled land, and naturally occurring soil is covered with 5 to 10 feet or more of fill material. The average thickness of the overburden is 20 feet, with an average thickness of 40 feet in the vicinity of a local depression (in the vicinity of JW-19). The overburden materials consist of weathered bedrock, glacial till, tidal flat, and beach deposits, as well as the man-emplaced fill. The net groundwater flow is toward the shoreline. Groundwater flow at OU3 (and PNS) appears to be a localized system that is not affected by the mainland groundwater flow system. The approximate depth to groundwater ranges from 8 to 13 feet below ground surface. Groundwater at OU3 consists of freshwater that flows into areas of saline/brackish groundwater.

Soil and groundwater data for Sites 8, 9, and 11 show similar chemical contamination throughout the area of the landfill. A variety of organic and inorganic constituents were detected in soil and groundwater and included volatile organic compounds, semi-volatile organic compounds, polychlorinated biphenyls (PCBs), pesticides, metals, and petroleum hydrocarbons. During the 2000 test pitting at the JILF (in February/March) dioxin analysis of select subsurface soil samples was conducted and low levels of dioxin were detected. The contamination at the three sites is consistent with the heterogeneous nature of the materials that were landfilled at the JILF (i.e., a range of concentrations of a variety of chemicals was detected in the JILF suggesting a heterogeneous mixture of wastes in the landfill).

Because of the heterogeneous nature of the materials in the landfill, COC specific cleanup goals for soil were not used to develop the extent of contaminated soil at OU3. Historical information on landfilling was used to determine the approximate extent of landfill material. The approximate boundary is shown on Figure 2-3. Because groundwater at OU3 includes fresh groundwater flowing into saline/brackish groundwater that is tidally influenced along the shoreline of OU3, the boundary of the JILF (which is along the shoreline in the discharge areas for groundwater) was used to determine the extent of contaminated groundwater at OU3. COC-specific cleanup goals for groundwater were not used to develop the extent of contaminated groundwater; however, as long as contaminant concentrations in OU3 (fresh) groundwater exceed maximum contaminant levels (MCLs), non-zero maximum contaminant level goals (MCLGs), and maximum exposure guideline (MEGs) in groundwater monitoring wells at the site, institutional controls will be required to prevent human access or exposure to OU3 (fresh) groundwater.

At Site 9, the concrete vaults and the mercury-contaminated materials contained in the vaults have been removed and there is no indication that mercury from Site 9 has contaminated the surrounding environmental media (soil and groundwater). Therefore there are no remaining chemicals of concern or contaminated media associated with Site 9.

At Site 11 the storage tanks and surrounding soil have been removed. The chemicals detected in the Site 11 soil and groundwater samples reflect JILF contamination in addition to petroleum contamination that may have originated from spills during filling of the tanks formerly at Site 11. The remaining petroleum contamination in the soil and groundwater from Site 11 operations is being addressed as part of the JILF (Site 8) because of its close proximity and similar nature to JILF contamination.

2.6 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

OU3 is covered with grass, pavement, or gravel and is used for limited recreational activities, vehicle parking, and equipment storage. The Solid Waste Handling Facility (Building 354) is also located within the boundary of the JILF. The facility is used for consolidating solid waste from PNS before offsite disposal. Currently, recreational activities include use of the jogging track and fitness stations (within the track) by Shipyard employees (civilian and military). The frequency and number of people using the recreational facilities are not monitored. The JILF is not currently used for organized sports or organized recreational activities. The shoreline along the area is mainly rocky and steeply sloped to the water and is covered with river water from approximately mid to high tide. Therefore, there is limited access to the shoreline from those areas. Various types of equipment are stored at the JILF such as empty unused dumpsters, temporary buildings, and other types of metal structures. Vehicles are used to transport the equipment to the storage area on the JILF year round. Some portions of the storage area are cleared of snow in the winter around the crane test pad (although the crane test pad will not be located on the JILF once the remedy for OU3 is completed). Uses of the adjacent area to the landfill include equipment

storage, hazardous waste transfer facility, residential use (e.g., Building H27), temporary lodging facility, office facilities, and ambulatory care services.

The future planned use of the JILF is similar to the current uses.

Groundwater at OU3 consists of freshwater that flows into areas of saline/brackish groundwater. Groundwater at PNS is not used for potable water and future use of groundwater for drinking is an unlikely future use scenario.

2.7 SUMMARY OF SITE RISKS

In evaluating site risks, the Navy considered human health and ecological risks as well as potential offshore impacts from shoreline erosion. For the source control remedy for OU3, site risks for exposure to soil and groundwater within the JILF boundary are discussed below. The following summarizes the results of the 2000 revised human health risk assessment conducted for OU3 (TtNUS, May 2000a) and the 1992 onshore ecological risk assessment conducted for PNS (McLaren/Hart, August 1992) related to exposure to soil and groundwater within the JILF boundary. The 2000 risk assessment was conducted to incorporate updated risk assessment guidance and new data collected since the initial (1994) risk assessment was conducted (the PHERE [McLaren/Hart, March 1994]) and the start of the revised risk assessment (in 1999). The results of the risk assessments were used to identify COCs for OU3 and to develop remedial action objectives for risks associated with exposure to onshore media. Additional details on the risk assessment for OU3 are provided in Section 5.0 of the Feasibility Study Report of Operable Unit 3 (TtNUS, November 2000a).

Based on the results of the risk assessments for soil and groundwater within the JILF, actual or threatened releases of hazardous constituents from the sites in this OU, if not addressed by implementing the response action selected in this ROD, may present a current or potential threat to public health, welfare, or the environment.

2.7.1 Human Health Risk

The revised human health risk assessment for OU3 (TtNUS, May 2000a) was performed to characterize the potential risks to likely human receptors (e.g., workers) under current and future land use incorporating updated risk assessment guidance and new data collected since the time of the initial 1994 risk assessment. Current USEPA guidance and CERCLA requirements are considered as well as State of Maine risk guidelines.

The human health risk assessment follows a 4-step process: (1) contaminant identification that identifies those hazardous substances which, given the specifics of the site, were chemicals of potential concern (selected based on toxicity, frequency of detection, etc.); (2) exposure assessment that identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; (3) toxicity assessment that considered the types and magnitude of adverse health effects associated with exposure to hazardous substances; and (4) risk characterization that integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the site, including carcinogenic and non-carcinogenic risks.

Data for Site 11 indicate a different source area than Site 8 (although Site 11 contamination could be adequately addressed as part of Site 8). Therefore, for the revised risk assessment, risks were evaluated for Sites 8 and 9 combined (excluding the JILF Impact Area) and Site 11. Current and future land uses are similar across all the sites within OU3. Potential human receptors under current land use are occupational workers, construction workers, and recreational users. Although likely future land use is expected to be the same as current land use, residents (adults and children) were also evaluated in the revised human health risk assessment.

The exposure routes consider soil ingestion, dermal contact with soil, inhalation of air/dust particulates, and ingestion, dermal contact, and inhalation of volatiles from groundwater (incidental ingestion/dermal contact with surface waters and sediments were evaluated, but will be addressed as part of OU6). Site 11 is covered with asphalt and there is no exposure pathway to surface soil; therefore, risks from exposure to surface soils were not calculated. (Hypothetical construction worker exposure to groundwater and subsurface soils and hypothetical future resident exposure to groundwater and subsurface soils were evaluated in the Revised OU3 Risk Assessment.) Soil samples collected in the 0 to 2 foot below ground surface were defined as surface soil; soil samples collected in the 2 to 10 below ground surface interval were defined as subsurface soils.

The results of the revised human health risk assessment for each site area are summarized below. Carcinogenic and non-carcinogenic risk estimates are compared to USEPA and State of Maine risk benchmarks. Carcinogenic risk estimates are generated using the cancer slope factor (CSF), an indicator of the strength or potency of a carcinogen. USEPA's generally acceptable target risk range under CERCLA for carcinogenic risk for site-related exposure is to 10^{-6} to 10^{-4} (i.e., a one-in-1,000,000 to a one-in-10,000 increased chance of developing cancer over a 70-year lifetime). The State of Maine's risk guideline is 10^{-5} (i.e., a one-in-100,000 increased chance of developing cancer). Non-cancer risk estimates are presented in terms of a hazard quotient that is defined as the ratio of the chemical intake to an acceptable dose (referred to as the Reference Dose [RfD]). A hazard index (HI) is generated by adding the hazard quotients for all chemicals of potential concern that affect the same target organ within

or across all media to which a given individual may reasonably be exposed. An HI less than one indicates that adverse non-carcinogenic health effects are not anticipated.

Sites 8/9

Cancer risk estimates for occupational workers exposed to surface soils; recreational users exposed to surface soils and construction workers hypothetically exposed to soils and groundwater are less than or within the CERCLA target risk range (1×10^{-6} to 1×10^{-4}), whereas cancer risk estimates for the hypothetical future residents exposed to soils and groundwater, exceed the CERCLA target risk range. With the exception of the construction worker scenario, cancer risk estimates exceeded the State of Maine acceptable risk guideline (1×10^{-5}). Non-carcinogenic risk estimates indicate that adverse noncarcinogenic health effects are possible only for the hypothetical future residential scenarios. Risks for the hypothetical future resident are primarily attributable to arsenic in soils and groundwater. (The total HI, an indicator of the potential for non-carcinogenic health effects, calculated for the construction worker exceeds 1. However, the HI calculated on a target organ/effect basis does not. Thus, adverse noncarcinogenic health effects are not anticipated for the construction worker.) The risk drivers identified for Sites 8/9 are arsenic and PAHs. Note, however, these chemicals were detected in facility (PNS) background soil samples (TtNUS, May 2000c). In fact, arsenic concentrations in Sites 8/9 soils appear to reflect facility background concentrations. Arsenic was detected in 53 of 55 soil samples collected in the 0- to 10-foot soil depth interval at Site 8/9 at maximum and arithmetic mean concentrations of 26.6 mg/kg and 8.6 mg/kg, respectively. Arsenic was detected in facility background soil samples at maximum and arithmetic mean concentrations of 22.2 mg/kg and 12.8 mg/kg, respectively. The representative concentrations (i.e., the 95 percent upper confidence on the mean) presented in the Revised OU3 Risk Assessment Report (TtNUS, May 2000a) were 9.97 mg/kg and 14.3 mg/kg for the Site 8/9 and facility background soil datasets, respectively. Consequently, risk estimates for background arsenic concentrations would exceed those calculated for the Site 8/9 soils.

A quantitative evaluation of exposure to lead in soil and groundwater was also conducted for Sites 8/9 and indicated that lead concentrations in surface and subsurface soil only represented a potential risk to a construction worker based on conservative exposure scenario (i.e., the evaluation assumed a 480 mg/day soil ingestion rate for a 250-day duration for a pregnant woman). Exposure estimates indicated acceptable lead concentration levels in soil for other receptors or for the construction worker when the receptor was evaluated using a more central tendency soil ingestion rate recommended by the USEPA (i.e., 100 mg/day). In addition, the representative concentration of lead in soil at Sites 8/9 (416 mg/kg – the 95 percent upper confidence limit on the arithmetic mean) and the arithmetic mean concentration (274 mg/kg) are less than the screening level of 1,000 mg/kg for industrial sites. Additionally, few lead detections in soils at Sites 8/9 exceed background. Exposure to lead in groundwater was also evaluated and risks were found to be acceptable.

Therefore, at Sites 8/9, based on current and likely future land use (occupational workers, recreational users, and construction workers), unacceptable risks from soil and groundwater exposure are not anticipated (i.e., risk estimates do not exceed USEPA risk benchmarks). Additionally, risks attributable to lead exposure are anticipated to be marginal given the "hot spot" nature of the contamination and the conservative nature of the baseline risk assessment. These results are significant because it is anticipated that current land uses of Sites 8/9 will continue (see Section 2.6 of this ROD). In contrast, a future resident (although unlikely based on Navy planned landuse) could be at risk from soil and groundwater exposure. However, it is unlikely that the groundwater resource will ever be used for domestic purposes. Based on the State of Maine risk guideline, only cancer risk estimates for the construction worker were acceptable.

Site 11

Cancer risk estimates for the construction worker exposed to soils and groundwater are less than or within the CERCLA target risk range (1×10^{-6} to 1×10^{-4}), whereas the cancer risks estimates for the hypothetical future residents exposed to groundwater exceed the CERCLA target risk range. For both exposure scenarios, cancer risk estimates exceeded the State of Maine acceptable risk guideline (1×10^{-5}). Non-carcinogenic risk estimates indicate that adverse non-carcinogenic health effects are possible under the hypothetical future residential scenario. The risk driver identified for Site 11 was arsenic (in groundwater). However, arsenic was detected at a concentration similar to the facility (PNS) background concentration (TtNUS, May 2000c).

A quantitative evaluation of exposure to lead in soil was also conducted for Site 11 and indicated that lead concentrations in surface and subsurface soil only represented a potential risk to a construction worker based on conservative exposure scenario (i.e., the evaluation assumed a 480 mg/day soil ingestion rate for a 250-day duration for a pregnant woman). Exposure estimates indicated acceptable lead concentration levels in soil for other receptors or for the construction worker when the receptor was evaluated using a more central tendency soil ingestion rate recommended by the USEPA (i.e., 100 mg/day). Additionally, few lead detections at Site 11 exceed 400 mg/kg, the USEPA action level assuming residential land use. The representative concentration of lead in soil at Site 11 (598 mg/kg – the 95 percent upper confidence limit on the arithmetic mean) and the arithmetic mean concentration (184 mg/kg) are less than the screening level of 1,000 mg/kg for industrial sites. Furthermore, reported lead concentrations (the maximum concentration is 899 mg/kg) are similar (i.e., within the same order of magnitude) to background concentrations.

Therefore at Site 11, based on current and likely future land use (construction worker) unacceptable cancer and noncancer risks from soil and groundwater exposure are not anticipated) when risk estimates

are compared to USEPA risk benchmarks. However, based on the State of Maine risk guideline, unacceptable cancer risks are anticipated under both current and future land use scenarios. Risks attributable to lead exposure are anticipated to be marginal given the "hot spot" nature of the contamination and the conservative nature of the baseline risk assessment. These results are significant because it is anticipated that current land uses of Site 11 will continue (see Section 2.6 of this ROD). In contrast, a future resident (although unlikely based on Navy planned land use) could be at risk from soil and groundwater exposure. It is unlikely that the groundwater resource will ever be utilized for domestic purposes.

2.7.2 Ecological Risk

An onshore ecological risk assessment was conducted at PNS in 1992 (McLaren/Hart, August 1992) that included an assessment of the ecological risks at the JILF. The objectives of the risk assessment as related to the JILF were to survey and characterize, in terms of composition and abundance, the terrestrial and avian biota; sample and analyze tissue of biota for types of contaminants potentially related to site activities and disposal practices; and compare media and biota concentrations of contaminants of concern to identify pathways of exposure and bioaccumulation and to qualitatively evaluate potential risks to ecological receptors. Specific activities conducted as part of the risk assessment include vegetation population survey, vegetation tissue sampling, small mammal population survey, rodent tissue sampling, and bird population survey. The assessment concluded that the ecological habitat and communities present were representative of disturbed settings. The vegetation observed at the JILF did not appear to be stressed and was considered representative of that typically found in a natural field in primary succession. In summary, no onshore ecological risks were attributed to the site.

A mechanism by which contaminants could migrate into the offshore environment is by the erosion of the landfill wastes by the tidal action of the Piscataqua River. These contaminants could either dissolve in the river water or be deposited as sediments near the shore. Existing shoreline erosion controls at OU3 (along a portion of Clark Cove) that were constructed during dredge spoil deposition have not been investigated, but appear to be in good condition. However, long-term maintenance of erosion controls is necessary to ensure the controls (existing or any additional) remain effective in the future.

2.7.3 Chemicals Of Concern

OU3 media (soil/fill material and groundwater) were evaluated for onshore exposure (human health and ecological). COCs are chemicals that pose a potential threat to human health or the environment and need to be addressed through a CERCLA response action. Risks were acceptable for human exposure to brackish/saline groundwater at OU3 (based on construction worker exposure scenario); therefore, no COCs were identified for brackish/saline groundwater for source control. Onshore ecological risks were

acceptable; therefore, no COCs were identified for onshore ecological exposure. The following provides a discussion of the selection of the COCs for soil and fresh groundwater within the JILF boundary. Table 2-1 (provided at the end of Section 2.0) provides a summary of the risks (based on reasonable maximum exposure [RME] assumptions) for receptors exposed to soil and fresh groundwater with total cancer risk estimates within or greater than the CERCLA target risk range or noncancer risks greater than 1. The risk estimates for the COCs are also provided in this table. Table 2-2 provides a summary of the COC concentrations and exposure point concentrations (EPC) in soil and fresh groundwater at OU3 (provided at the end of Section 2.0). Table 2-3 provides the cancer and noncancer toxicity data summary (i.e., cancer slope factors and reference doses) for the COCs (provided at the end of Section 2.0).

Soils

For human health, the Revised OU3 Risk Assessment (TtNUS, May 2000a) was used to identify risk drivers. The onshore ecological risk assessment for the JILF indicated that no onshore ecological risks were attributed to the site. Therefore, COCs for soil were only identified based on human health risk drivers. The risk assessment results for the RME (see Table 2-1) were used to determine the COCs. Chemicals that had an individual Incremental Lifetime Cancer Risk (ILCR) greater than 1×10^{-6} and representative concentrations greater than facility background were identified as COCs for any exposure scenario that posed a total ILCR greater than 1×10^{-4} and/or 1×10^{-5} . No COCs were identified if the total ILCR for an exposure scenario did not exceed 1×10^{-5} . For noncancer risks, the HIs were evaluated. For each exposure scenario with a total HI greater than 1, chemicals with individual HI greater than 1 and representative concentration greater than facility background were identified as COCs. In addition, chemicals with the same target organ and with an individual HI greater than 0.2 were also summed and evaluated for exceedances of 1; however, no COCs were identified based on this target organ evaluation. For lead, modeling (using lead risk models) was conducted to identify whether lead is a COC.

Based on the chemicals evaluated in the Revised OU3 Risk Assessment, only arsenic at Site 8/9 was not identified as a soil COC, because the representative concentrations (9.97 mg/kg for surface soil and 9.63 mg/kg for surface and subsurface soils) were below facility background (14.3 mg/kg).

The following table summarizes the identification of human health soil COCs based on RME:

Site Name/ Exposure Scenario	Soil COCs			
	COCs for Total ILCR > 1×10^{-5}	COCs for Total ILCR > 1×10^{-4}	COCs for HI>1.0	Lead
Site 8/9 Hypothetical Future Resident (Surface Soil)	PAHs	PAHs	None	No
Site 8/9 Construction Worker (Surface and Subsurface Soil)	None	None	None	Yes
Site 8/9 Occupational Worker (Surface Soil)	PAHs	None	None	No
Site 8/9 Recreational User (Surface Soil)	PAHs	None	None	No
Site 11 Construction Worker (Subsurface Soil)	PAHs, Arsenic	None	None	Yes

Notes: PAHs include Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, and/or Indeno(1,2,3-cd)pyrene (see Table 2-1 for the specific PAHs for each receptor).

Soil from Site 8/9 and Site 11 can be addressed together for remedial activities; therefore, the soil COCs identified for Site 8/9 and Site 11 were combined to develop the list of soil COCs for OU3. The following is the list of soil COCs:

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene
- Arsenic
- Lead

Groundwater

For human health exposure to groundwater, the Revised OU3 Risk Assessment (TtNUS, May 2000a) was used to identify risk drivers for the receptors discussed in the risk assessment. For cancer risks, each exposure scenario with total ILCR greater than 1×10^{-4} and/or 1×10^{-5} the chemicals with individual ILCR greater than 1×10^{-6} and representative concentrations greater than facility background were identified as COCs. For noncancer risks, the HIs were evaluated. For each exposure scenario with a total HI greater

than 1, chemicals with individual HI greater than 1 and representative concentrations greater than facility background were identified as COCs. In addition, chemicals with the same target organ and with individual HI greater than 0.2 were also summed and evaluated for exceedances of 1; however, no COCs were identified based on this target organ evaluation. For lead, modeling was conducted using the IEUBK to identify whether lead is a COC. For fresh groundwater only, chemicals with representative concentrations greater than MCLs or MEGs that also exceeded facility background were selected as COCs (only aluminum and manganese were not included because concentrations were less than facility background). Note that MCLs/MEGs are not relevant and appropriate chemical-specific requirements for OU3, but are relevant and appropriate action-specific requirements.

The following table summarizes the identification of human health groundwater COCs based on RME and MCL/MEG exceedances:

Site Name/ Exposure Scenario	Groundwater COCs			COC > MCLs or MEGs
	COCs for Total ILCR > 1×10^{-5}	COCs for Total ILCR > 1×10^{-4}	COCs for HI > 1.0	
SITE 8/9 Hypothetical Future Resident (freshwater groundwater)	Arsenic, 1,4-dichlorobenzene, benzene	Arsenic, 1,4-dichlorobenzene, benzene	Arsenic	Antimony, Arsenic, Cadmium, Lead, Nickel, and Thallium
Site 8/9 Construction Worker (shallow groundwater)	None	None	None	
Site 11 Hypothetical Future Resident (freshwater groundwater)	Arsenic	Arsenic	Arsenic	
Site 11 Construction Worker (shallow groundwater)	None	None	None	

The groundwater at OU3 can be addressed as a whole; therefore, the groundwater human health COCs for Site 8/9 and Site 11 were combined to develop the list of fresh groundwater COCs. Because 1,4-dichlorobenzene was not detected at concentrations exceeding MCLs or MEGs, it was not included as a groundwater COG. Only fresh groundwater COCs are identified for human health because risks for exposure to fresh groundwater exceeded 1×10^{-5} / 1×10^{-4} for carcinogenic risk or a HI of 1 for non-carcinogenic risk. Risks for exposure for construction worker to all shallow groundwater (including fresh, brackish and saline) were less than the State of Maine risk guidelines of 1×10^{-5} for carcinogenic risk or a HI of 1 for non-carcinogenic risk.

Fresh groundwater COCs for OU3 are:

- Benzene
- Antimony
- Arsenic
- Cadmium
- Lead
- Nickel
- Thallium

2.8 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are medium-specific goals that define the objectives of the remedial action and are based on the contaminants, the affected environmental media, the pathways of exposure to potential receptors, and acceptable contamination concentrations. Based on the analysis of these factors (discussed in the preceding sections), RAOs are determined.

The following are the RAOs, as provided in the Feasibility Study Report for Operable Unit 3 (TtNUS, November 2000a), that address exposure to materials within the JILF boundary (OU3) based on risks to potential receptors (human and ecological):

1. Prevent human exposure through ingestion, dust inhalation, and dermal contact to contaminated soils and/or waste within the landfill at unacceptable levels.
2. Prevent human exposure through ingestion of contaminated groundwater at unacceptable levels.
3. Prevent erosion of contaminated soils and/or waste on the edge of the landfill to the Piscataqua River or the Back Channel.
4. Provide for JILF's current and future uses (organized and unorganized sports, equipment storage, and parking) while providing sufficient protection of human health and the environment.

The unacceptable levels identified in RAO 1 and 2 are based on the revised human health risk assessment for OU3. To meet CERCLA (and the National Oil and Hazardous Substances Pollution Contingency Plan [NCP]) requirements for remedial activities, carcinogenic risk estimates less than or within a target risk range of 10^{-6} to 10^{-4} and non-carcinogenic risk estimates less than an HI of 1 are considered acceptable. Therefore, for determining whether RAO 1 is being met, carcinogenic and non-carcinogenic risk estimates exceeding 10^{-4} and 1, respectively, are unacceptable. Based on current and likely future land use (occupational workers, recreational users, and construction workers), risks are

acceptable. Although the non-carcinogenic risk estimate for the construction worker marginally exceeded one (1.3 to 1.4), HI calculated on a target organ/effect basis does not. Also, arsenic was identified as the major risk driver, but arsenic concentrations appear to reflect facility background concentrations. Risk estimates for the hypothetical future resident exceeded acceptable levels. However, this scenario is unlikely based on PNS' current and future plans for use of land at OU3. In addition, risks for future residents included risks for using OU3 groundwater for drinking water. This is also highly unlikely because portions of groundwater at OU3 are brackish or saline and the areas with fresh water discharge to saline/brackish groundwater. Remediation of groundwater to drinking water levels would not be necessary for groundwater at OU3 because (1) OU3 groundwater is not currently used for drinking water, (2) PNS currently receives drinking water from an offsite public water system, and (3) it is unlikely that OU3 groundwater would be used for drinking in the future. Therefore, active remediation of OU3 groundwater is not necessary to meet RAO 2.

The State of Maine acceptable risk guideline is also considered in evaluating the degree to which an alternative meets RAOs 1 and 2. Based on the State of Maine guideline, carcinogenic risk estimates less than 10^{-5} are considered acceptable. For non-carcinogenic risks, an HI of one is also used by the State of Maine. Estimated risks for current and future land use exceed State of Maine acceptable risk guidelines (for all receptors).

RAO 3 addresses the concern that the landfill is exposed to the tidal action of the Piscataqua River, and consequently, potential exists for erosion of the waste/fill material along the shoreline of OU3.

RAO 4 is required to ensure remedial alternatives for OU3 (within the boundary of the JILF) will consider the current and planned future land uses, while still meeting the other RAOs. Currently OU3 is used for industrial (vehicle parking and equipment storage) and limited recreational purposes. PNS plans to continue to use OU3 for these purposes in the future, including development of additional parking areas, where possible. PNS does not plan to use OU3 for any form of housing or lodging or any childcare or pre-school.

2.9 DEVELOPMENT AND SCREENING OF ALTERNATIVES

Under its legal authorities, Navy's primary responsibility at Superfund sites on or emanating from Navy property is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that Navy's remedial action, when complete, must comply with all federal and more stringent state environmental and facility siting standards, requirements, criteria, or limitations, unless a waiver is invoked; a requirement that the Navy select a remedial action that is cost effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery

technologies to the maximum extent practicable; and a preference for remedies in which treatment which permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances is a principal element over remedies not involving such treatment. Response alternatives were developed to be consistent with these congressional mandates.

CERCLA and the NCP set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives was developed to meet the RAOs for OU3. With respect to source control (OU3), the Feasibility Study developed a range of alternatives including an alternative that removes or destroys hazardous substances to the maximum extent feasible, eliminating or minimizing to the degree possible the need for long-term management. This range also included alternatives that treat the principal threats posed by the site but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed; alternative(s) that involve little or no treatment but provide protection through engineering or institutional controls; and a no action alternative.

As discussed in Section 7.0 of the Feasibility Study Report for Operable Unit 3 (TtNUS, November 2000a), soil and groundwater technology options were identified, assessed, and screened based on implementability, effectiveness, and cost. The retained technologies were combined into seven alternatives. An initial screening of the alternatives was conducted to narrow the number of potential remedial actions for further detailed analysis. Each alternative was then evaluated in detail in Section 8.0 of the Feasibility Study for Operable Unit 3.

The Feasibility Study Report for Operable Unit 3 was finalized without reflecting the separation of OU3 (source control) and OU6 (management of migration). Of the seven alternatives developed in the Feasibility Study, five were retained for further evaluation in the detailed analysis. Of the five alternatives, four are source control alternatives and one is a management of migration alternative. The four source control alternatives are described in the next section.

2.10 DESCRIPTION OF ALTERNATIVES

A summary of the remedial action alternatives for OU3 presented below is based on the description of alternatives in the Feasibility Study Report for Operable Unit 3, with consideration of the separation of OU3 and OU6, as well as the PRAP for OU3. The Navy's selected remedy for OU3 is Alternative 3 (which is described in more detail in Section 2.12).

Alternative 1: No Action

- No remedial action or monitoring would be performed and no institutional controls would be implemented under this alternative. Current land use would continue. This alternative is presented only as a baseline for comparison with other remedial action alternatives as required by the NCP.

Alternative 2: Institutional Controls, Erosion Controls, and Monitoring

- Institutional controls to restrict land and fresh water groundwater uses at the JILF to prevent unacceptable human exposure to the contaminants. The restrictions would be recorded on installation maps, master plans, real estate records, and Geographical Information System (GIS). Periodic record searches and/or site visits would be conducted to ensure that the restrictions are being imposed. The restrictions would allow for current land use (limited recreational activities, vehicle parking, and equipment storage) to continue. If the property were ever transferred out of federal ownership, the Navy would retain ultimate responsibility for ensuring that the restrictions continued to be in place and effective.
- Monitoring of site media (e.g., groundwater) to assess the effectiveness of the alternative over the long term. The environmental monitoring program would be developed and documented in a monitoring plan, which would be submitted for review and comment before implementation. Installation of additional groundwater monitoring wells would also be conducted as necessary to provide adequate monitoring points for groundwater. The monitoring data would be used to develop trends in concentrations to indicate whether OU3 is a continued source of contaminants and whether additional action is necessary. Evaluation of the data would occur at least every five years.
- Shoreline erosion controls, including rip-rap and/or wetlands placed along the shoreline, to minimize the potential for washing away of waste materials from the edge of the JILF. The details of the locations, extents, materials of construction, etc., would be determined in the design based on results of a pre-design investigation.
- Estimated costs include:
 - capital costs (costs for construction) of \$2,127,000
 - annual operating costs of \$55,000 the first year (for wetland maintenance), plus \$88,000 per year (for sampling and analysis) plus \$12,000 every 5 years (for site review)
 - present-worth costs (30-year based on a 7% discount rate) of \$3,342,000

This alternative would not reduce the infiltration of water through the landfill material because a cover is not included as part of this alternative. The major applicable or relevant and appropriate requirements (ARARs) associated with this remedy relate to consideration of the potential impact to the offshore environment (Piscataqua River and nesting birds) during implementation of the remedial action (e.g., construction of erosion controls). Completion of this alternative following remedial design is expected to take approximately 6 months. Long-term monitoring would be conducted for at least 30 years.

Alternative 3: Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Control, and Monitoring

- Institutional controls, monitoring, and shoreline erosion controls as provided under Alternative 2.
- A multiple layer cover over the landfill surface that would prevent receptors on the surface from coming in contact with contaminated soil and/or waste and minimize infiltration of water through the cover to the landfill material. Cover components include an enhanced drainage layer and a barrier layer over the landfill material:
 - Enhanced Drainage Layer: A drainage layer with a high-flow capacity that would allow water to more efficiently drain away from the landfill than a standard cap drainage layer (e.g., as included in Alternative 4).
 - Barrier Layer: A composite liner under the drainage layer that includes a combination of a synthetic liner and a soil with low permeability to minimize infiltration of any water that does not drain away from the landfill through the barrier layer to underlying landfill material.

The cover would be constructed to meet the RCRA hazardous waste landfill closure and post-closure requirements and the Maine Hazardous Waste Management Rules provisions pertaining to hazardous waste landfill covers, as well as other ARARs. The specific cover components would be determined in the cover design based on a pre-design investigation, as necessary.

- Estimated costs include:
 - capital costs (costs for construction) of \$10,198,000
 - annual operating costs of \$55,000 the first year (for wetland maintenance), plus \$88,000 per year (for sampling and analysis) plus \$8,000 per year (soil cap and asphalt maintenance), \$70,000 every 5 years (for pavement repairs and site review), plus \$167,000 every 10 years (for repavement)

- present-worth costs (30-year based on a 7% discount rate) of \$11,676,000

Following completion of the remedial design, actual field work is expected to take 12 months. Monitoring and cover maintenance activities are assumed to occur for at least 30 years.

Alternative 4: Cover with Composite Liner and Enhanced Barrier Layer, Institutional Controls, Erosion Control, and Monitoring

- Institutional controls, monitoring, and shoreline erosion controls as provided under Alternative 2.
- A multiple layer cover over the landfill surface similar to that of Alternative 3 in function, i.e., it would prevent receptors on the surface from coming in contact with contaminated soil and/or waste and minimize infiltration of water through the cover to the landfill material. Cover components include a drainage layer and an enhanced barrier layer over the landfill material:
 - Drainage Layer: A drainage layer that would allow water to drain away from the landfill.
 - Enhanced Barrier Layer: A composite liner under the drainage layer that includes a combination of a synthetic liner and a soil with very low permeability to minimize infiltration of any water that does not drain away from the landfill through the barrier layer to underlying landfill material. This layer is less permeable than the barrier layer provided in Alternative 3.

The cover would be constructed to meet the RCRA hazardous waste landfill closure and post-closure requirements and the Maine Hazardous Waste Management Rules provisions pertaining to hazardous waste landfill covers, as well as other ARARs. The specific cover components would be determined in the cover design based on a pre-design investigation, as necessary.

- Estimated costs include:
 - capital costs (costs for construction) of \$13,022,000
 - annual operating costs of \$55,000 the first year (for wetland maintenance), plus \$88,000 per year (for sampling and analysis) plus \$8,000 per year (soil cap and asphalt maintenance), \$70,000 every 5 years (for pavement repairs and site review), plus \$167,000 every 10 years (for repavement)
 - present-worth costs (30-year based on a 7% discount rate) of \$14,499,000

Following completion of the remedial design, actual field work is expected to take 12 months. Monitoring and cover maintenance activities are assumed to occur for at least 30 years.

2.11 COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that, at a minimum, are required in evaluating alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives. The alternatives were compared in detail using the threshold and balancing criteria in the Feasibility Study Report for Operable Unit 3 (TtNUS, November 2000a). The modifying criteria are addressed as part of this ROD. The comparative analysis for the alternatives is summarized in Table 2-4. The following is a summary of the criteria followed by a summary of the analysis.

Threshold Criteria

The two threshold criteria described below must be met for an alternative to be eligible for selection in accordance with the NCP:

1. **Overall protection of human health and the environment** addresses whether a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
2. **Compliance with ARARs** addresses whether a remedy will meet all federal environmental and more stringent State environmental and facility siting standards, requirements, criteria or limitations, unless a waiver is invoked.

Balancing Criteria

The next five criteria are used to compare and evaluate the elements of one alternative to another that meet the threshold criteria:

3. **Reduction of toxicity, mobility, or volume through treatment** addresses the degree to which alternatives use recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site.

4. **Short-term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.
5. **Long-term effectiveness and permanence** addresses the criteria that are used to assess alternatives for the long-term effectiveness and permanence they afford, along with the degree of certainty that they will prove successful.
6. **Implementability** addresses the technical and administrative feasibility of a remedy including the availability of materials and services needed to implement a particular option.
7. **Cost** includes estimated capital and operation and maintenance costs, as well as present-worth costs.

Modifying Criteria

Modifying criteria are used as the final evaluation of remedial alternatives and are generally evaluated after the public comment period on the PRAP.

8. **State acceptance** addresses the State's position and key concerns related to the preferred alternative and other alternatives, and the State's comments on ARARs or the proposed use of waivers.
9. **Community acceptance** addresses the public's general response to the alternatives described in the PRAP and Feasibility Study report.

Overall Protection of Human Health and the Environment:

Alternatives 2, 3, and 4 would provide adequate protection to human health and the environment with the least amount of potential for short-term risks associated with excavation. Because there is no action to address site risks under Alternative 1, this alternative would not provide adequate protection of human health and the environment.

Alternative 2 may not be adequately protective of human health according to the State of Maine Risk Guideline; however, because there would be fewer short-term risks to workers compared to Alternatives 3 and 4, these three alternatives offer similar overall protection of human health. Alternatives 3 and 4 would pose increasing potential for threats to worker safety because of the extent of excavation of fill material required as part of cap construction. Alternatives 2, 3, and 4 would achieve the primary RAO of

prevention of human exposure through administrative controls (under Alternative 2) or by using physical barriers and administrative controls (under Alternatives 3 and 4). Alternatives 2, 3, and 4 offer a similar level of protectiveness by preventing exposure to contaminated soil and groundwater. The reasonable land use scenario in the foreseeable future for OU3 would be continued PNS use with enforcement of restrictions on the use of the land and therefore, Alternative 2 can be expected to be equally effective in the long term as Alternatives 3 and 4 in protecting human health.

Alternatives 2, 3, and 4 are expected to be similar in protectiveness of the environment because the components to address the primary RAO related to the environment are the same; i.e., erosion controls.

Compliance with ARARs:

ARARs analysis is not applicable to Alternative 1 (No Action). All of the other alternatives comply with ARARs. Alternative 2 does not include a cover; therefore, under CERCLA, capping regulations are not ARARs. Alternatives 3 and 4 include covers that would be constructed to meet the RCRA hazardous waste landfill closure and post-closure requirements and the Maine Hazardous Waste Management Rules provisions pertaining to hazardous waste landfill covers, as well as other ARARs.

Reduction of Toxicity, Mobility, or Volume Through Treatment:

No alternative would reduce the toxicity, mobility, or volume of contaminated soil or groundwater because no treatment would occur.

Short-term Effectiveness:

Short-term effectiveness is not applicable to Alternative 1 because no action would be conducted under this alternative. The potential for exposure to contaminants and jeopardy to worker safety would be the least in Alternative 2 and increase for Alternatives 3 and 4 as the alternatives include more construction activities/soil excavation. Alternatives 2, 3, and 4 have similar short-term effectiveness concerns with regard to construction of erosion controls. Alternative 2 would include no additional potential for worker or community exposure to contaminants, unlike Alternatives 3 and 4, where excavation/grading of the contaminated soil/fill material would be involved. Alternative 4 may include deeper excavation for grading purposes than Alternative 3. Also, Alternative 4 may include on-site amendment of the on-site soil to meet permeability requirements for the barrier layer soil.

Long-term Effectiveness and Permanence:

Alternative 1 would not be effective in the long term and does not offer a permanent remedy. Alternatives 2, 3, and 4 offer a moderate level of long-term effectiveness because the wastes would

remain in place. These alternatives depend on the evaluation of monitoring data to determine whether the remedy remains effective and whether additional controls or actions may be necessary to be protective of human health and the environment over the long term. Alternative 2 relies on institutional controls to prevent potential access to site contaminants, but does not provide a barrier against infiltration of rainfall through the landfill wastes. Alternatives 3 and 4 provide a cover (along with institutional controls) as a physical barrier against potential access to site contaminants and as a barrier against infiltration of rainfall through the landfill wastes. The cover with institutional controls provides a more permanent remedy than institutional controls alone.

Implementability:

All the alternatives are implementable and the ease of implementability decreases as the alternatives include more construction/excavation activities. Alternative 1 would be the easiest to implement because no action would be conducted. All components of Alternative 2 are included in Alternatives 3 and 4 (institutional controls, erosion controls, and monitoring); however, Alternatives 3 and 4 have the additional concerns related to installation of a cover. Therefore, Alternative 2 is easier to implement than Alternatives 3 and 4. In general, Alternative 4 would likely be more difficult to implement than Alternative 3 because Alternative 4 includes a lower permeability soil (for the barrier soil layer) than Alternative 3, which may not be readily available. However, use of onsite soil amendment to meet the barrier soil requirements may be possible to provide soil of the appropriate permeability.

Cost:

No costs are associated with Alternative 1 because no action would be conducted. Alternatives 3 and 4 include all components of Alternative 2 with the addition of a cover; therefore, the costs for Alternative 2 are lower than Alternatives 3 and 4. The costs for Alternative 4 are based on a more expensive combination of cover components and depending on the specifications for the specific components of the cover layers for Alternative 4, the costs may be less than estimated, but would be greater than Alternative 3 costs.

State Acceptance:

Alternatives 1 and 2 are not acceptable to the MEDEP because these alternatives do not include a hazardous waste landfill cover for the JILF. Alternatives 3 and 4 are similar in their general components and both include a hazardous waste landfill cover for the JILF; therefore, both meet MEDEP's requirement for capping. The MEDEP concurs with the selection of Alternative 3 for OU3.

Community Acceptance:

The public comment period for the PRAP for OU3 was held from January 31, 2001 through March 1, 2001. The community does not support Alternatives 1 and 2 because they do not include a landfill cover. The community supports covering the JILF with a hazardous waste landfill cover (as proposed in Alternative 3 or 4), but indicated a preference to address management of migration of groundwater from the JILF to the offshore concurrently with capping of the JILF. Specifically, comments were received from 30 community members, 2 organizations (Clean Water Action and SAPL), and the City of Portsmouth. The majority of comments indicated concerns with the separation of the source control (OU3) remedy from the management of migration (OU6) remedy and the need for a cut-off barrier in addition to the landfill cover to protect human health and the environment. In addition, four comments indicated a preference for complete removal of the landfill and one comment indicated a preference for no action (Alternative 1).

Public concerns raised during the public comment period are discussed in the Responsiveness Summary (Section 3.0 of this ROD).

2.12 SELECTED REMEDY

The selected remedy for source control for the JILF (OU3) includes a hazardous waste landfill cover, institutional controls, shoreline erosion controls, and monitoring (Alternative 3). Inspection and maintenance activities and 5-year site reviews are also included as part of the remedy.

The selected remedy would address the current and future potential threats to human health and the environment by providing a cover to prevent human exposure to landfill materials and to minimize infiltration of rainfall through the landfill material to groundwater, by using institutional controls to prevent use of site groundwater for drinking and prevent land use that is not compatible with the cover, by providing shoreline erosion controls to prevent erosion of landfill material from the edge of the landfill, and by monitoring site media to assess the effectiveness of the remedy and determine the need for additional action, if warranted, based on the monitoring results. Institutional controls will also be used to prevent unrestricted disturbance of the hazardous waste landfill cover, shoreline erosion controls, and buildings and structures within the boundary of the JILF. Routine inspections and maintenance of the cover, erosion controls, and institutional controls will be conducted to ensure that once implemented, the remedy remains effective over the long term. The inspection and maintenance activities will also include verification activities to determine whether the buildings and structures with the JILF boundary are still in place. Five-year site reviews will be conducted to confirm that remedial action objectives are being achieved.

The selected remedy will meet ARARs and meets the MEDEP's requirement that the JILF be covered with a hazardous waste landfill cover. The ARARs are listed in Appendix C. In addition, the selected remedy provides the best balance of effectiveness, implementability, and costs, and it provides a permanent solution to the maximum extent practicable to address the landfill materials within the JILF.

The following provides a conceptual description of the remedy. The specific details for the remedy will be developed as part of the remedial design, which will be submitted for review and comment by the USEPA, MEDEP, and RAB. Pre-design evaluation/investigation will be conducted to support the remedial design as discussed below.

The cover will be constructed to meet RCRA Subtitle C requirements and Maine Hazardous Waste Management Rules using the Maine Solid Waste Management Regulation requirements for non-secure landfills as to-be-considered (TBC) criteria. The cover with composite liner and enhanced drainage layer will consist of a surface erosion protection layer over a "high-flow capacity" geocomposite (geonet with geotextile bonded to both sides) drainage layer over a composite liner. The composite liner will consist of a low-density polyethylene (LDPE) geomembrane over a layer of barrier soil. A vegetated surface erosion protection layer (consisting of top soil with vegetation over common fill) will be considered mainly for portions of the JILF that are currently vegetated (particularly within the running track area). An asphalt surface erosion protection layer (consisting of asphalt, gravel, and common fill) will be considered, mainly for areas currently covered with asphalt or gravel. The two covers differ in the surface erosion protection layers to meet the RAO of future land use. The approximate location of the areas to be covered is shown on Figure 2-6 and the conceptual cross-sections of the proposed covers with a composite liner and enhanced drainage layer are shown on Figure 2-7. An area of approximately 62,000 square feet (1.4 acres) is occupied by buildings and other structures related to industrial activity that will not be covered.

As a conservative measure, it is anticipated that the cover will include passive gas vents that will be placed at selected high elevation points. The vertical component of each vent will extend down through the fill to the low-tide groundwater elevation, and would be perforated below the barrier layer. A venting layer has not been provided because based on available information, minimal quantities of putrescible (decomposable) wastes have been deposited in the landfill, and therefore, the potential for gas formation from waste degradation is expected to be minimal. However, the specific design of any gas management system will be determined during the remedial design based on results of a landfill gas survey.

It is expected that the existing fill material can be excavated and spread to the extent necessary to meet the slope requirements. A 2 foot thick clay layer may exist at the site as part of a cover that was constructed over the area of the running track in 1979 when dredge spoils were deposited there. Some

portions or all of this clay and other low permeability soil material that may be present at OU3, if found to be free of debris, could be used as part of the barrier soil layer in the proposed cap. Note that USEPA Region I allows the use of a reinforced geosynthetic clay liner (GCL) as an alternative for the barrier soil (for caps with slopes that are less than 15 percent). The specific slope requirements will be determined as part of the cover design based on the results of the pre-design investigation.

It is assumed that Parker Avenue itself will not be covered. Approximately 13,750 square feet (a length of approximately 550 feet, greater than a width of 25 feet) of Parker Avenue lies within OU3. This road was built (as a causeway) before industrial landfilling operations began (around 1941); therefore, it is assumed that the surface and subsurface soil do not contain waste material.

Institutional controls to restrict future site usage will be implemented and shoreline erosion control construction will be conducted. Restrictions on land and groundwater uses will be implemented and monitoring will be conducted. The land use restrictions will be incorporated into the Navy's Base Master Plan or other similar document. If the landfill property was ever transferred out of Federal ownership, the United States will impose appropriate enforceable land use restrictions through the inclusion of appropriate restrictions (e.g., restrictive covenants and/or easements) in all deeds or other transfer documents relating to that property. In the event of such transfer, the Navy will retain ultimate responsibility for ensuring that the restrictions continued to be in place and effective and protective of human health and the environment. Installation maps, master plans, real estate records, and GIS will be used to record the nature and location of the restrictions. Periodic record searches and/or site visits will be conducted to ensure that the restrictions are being imposed. In addition, 5-year reviews will be required because waste will be left in place.

Monitoring will be required to evaluate the effectiveness of this remedy. The environmental monitoring program for OU3 will be developed using the data quality objectives process and the monitoring program will outline the data required, the samples and analysis to be conducted, data evaluation methods, and decisions to be made based on the evaluation. The Navy will use the results of the investigations at the JILF (e.g., chemicals detected, geological/hydrogeological conditions) to identify the data quality objectives for the monitoring program for OU3. The monitoring program will be provided in a monitoring plan that will be reviewed by the USEPA, MEDEP, and RAB and the plan will be finalized in accordance with the FFA.

Shoreline erosion control will be constructed to prevent the erosion of waste materials at the edge of the JILF and subsequent release of contaminants into the river. Approximately 1,500 feet of shoreline along Clark Cove and Jamaica Cove, as shown on Figure 2-7, will be stabilized. It is likely that portions of the JILF shoreline have already been stabilized during dredge spoils placement in 1979, and these portions

may not need to be stabilized further. The available information on the shoreline is inadequate to provide a complete understanding of the current stability of the shoreline. The exact extent of the shoreline that would need to be stabilized will be determined at the time of a pre-design investigation. However, for the purposes of conceptual design (provided in the Feasibility Study for Operable Unit 3), sections of the shoreline along Clark Cove and Jamaica Cove were assumed to require erosion controls. The design will consider using rip-rap alone, rip-rap in combination with wetlands, and/or wetland alone for the shoreline along OU3. Riprap is expected to be an effective method of shoreline protection for the long term. Wetlands construction (e.g., salt marshes) is a less commonly used method of erosion controls, and consequently its long-term effectiveness and permanence are less certain. Based on inspections, maintenance or modifications may or may not be necessary for successful long-term performance of the wetlands. The specific design for the erosion controls will be developed based on pre-design investigation/evaluation and the design will be provided to the USEPA, MEDEP, and RAB for review.

Details of the locations, extents, materials of construction, etc., would need to be determined based on results of a pre-design investigation and documented in the design report. The scope of this pre-design investigation should include geotechnical testing, a study of the tidal energy and hydraulics, a detailed survey of the shoreline, and a focused bathymetric investigation.

During remedial activities proper operating procedures will be necessary so that there would be little to no effect on the community, workers, or the environment. Air monitoring will be conducted so that fugitive emissions, particulate, and volatile (not expected) emissions would be at acceptable levels for ambient air and workers. In addition, Occupational and Safety and Health Administration (OSHA) regulations will be followed and a health and safety plan will be developed for all site work so that workers would be adequately protected from exposure through the use of gloves, boots, cartridge respirators, etc. as necessary. Proper run-on and run-off controls will be implemented during all remedial activities to minimize run-off contamination. An erosion and sediment control plan will be developed before implementation of this alternative.

Remedial activities that might disturb the nesting birds on Clark's Island will not be performed near the island between April 1 and August 15 to protect nesting birds.

Following completion of the remedial design, actual field work was estimated in the Feasibility Study Report for Operable Unit 3 to take 12 continuous months. This estimation does not take into account actual construction periods and shut down/start up of construction activities related to weather conditions (particularly for winters in the State of Maine). Actual construction is expected to take three construction periods (or approximately 36 months). Monitoring and cover maintenance activities are assumed to occur over 30 years for cost estimation purposes.

The most significant costs associated with the capping component of this alternative are grading, natural materials, and geosynthetics. On-site soil (the clay layer in the area within the running track) is assumed to be adequate to meet the permeability requirements of the barrier soil. The suitability of these soils for use in the barrier layer will be determined in the design based on the pre-design investigation results. Local availability of soil and gravel is assumed for the final grading of the cap. A higher cost (compared to a regular geonet) has been assumed for the high-flow capacity geonet drainage layer.

Estimated costs for this alternative are presented as follows from the Feasibility Study Report for Operable Unit 3 (TtNUS, November, 2000a) and include long-term groundwater monitoring costs.

- Capital Cost is \$10,198,000
- Annual Operating Cost is \$55,000 the first year (for wetland maintenance), plus \$88,000 per year (for sampling and analysis), plus \$8,000 per year (soil cap and asphalt maintenance), plus \$70,000 every 5 years (for pavement repairs and site review) plus \$167,000 every 10 years (repavement)
- Present-Worth Cost is \$11,676,000

Shoreline protection using a combination of riprap and wetlands construction has estimated raw costs of \$1 million, while using only riprap at the same locations of shoreline has an estimated cost of \$325,000. In addition, annual hosts for wetlands maintenance (for the first year) would not be required. Therefore, costs would be less if only riprap is used for shoreline erosion controls.

A summary of the estimated remedy costs is provided in Appendix C. The information in this cost estimate summary is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Changes may be documented in the form of a memorandum in the Administrative Record file, an Explanation of Significant Differences, or a ROD amendment. This is an order of magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

Based on comments received from the MEDEP on the schedule for OU6 and the concerns raised by the public during the comment period on the PRAP for OU3, the Navy, in consultation with the USEPA and MEDEP, has agreed to take action on OU6 sooner by incorporating the following activities related to OU6 into the ROD for OU3:

- Initiate development of a work plan for the additional investigation for OU6 by holding a DQO meeting within 60 days of signing of the ROD for OU3.

- Complete the work plan for the additional investigation for OU6 by the time the JILF cap construction is complete.
- Evaluate the possibility of wetlands construction specifically for water quality improvement to address groundwater migration from the JILF.

In addition to the items specifically associated with OU6, the Navy will re-evaluate the feasibility of consolidating portions of the landfill (in the Jamaica Cove area and the vicinity of the former location of Mercury Burial Site II) into the existing landfill. The evaluation will be conducted as part of the pre-design investigation and cap design and addresses issues related to both OU3 and OU6. Removal of waste material in the vicinity of Jamaica Cove could provide the additional benefits of removing waste from the more tidal influenced landfill area by Jamaica Cove and provide additional area for construction of wetlands. Removal of waste material in the former Mercury Burial Site II area is being considered so that the Navy can locate the discharge from the two fresh water ponds that is believed to enter the landfill in this area and redirect this discharge away from the landfill, thus reducing the amount of groundwater flowing into this portion of the landfill. The removed waste would be consolidated on the remaining portion of the landfill under the landfill cap. The excavated area in the former Mercury Burial Site II area would be backfilled with clean fill and would no longer be included as part of the JILF.

These activities related to OU6 are enforceable components of this ROD for OU3; a full enforceable schedule for subsequent activities related to OU6 will be incorporated in the Amended Site Management Plan as necessary.

The Navy will use the USEPA's DQO process to develop a sampling program for OU6 that includes information on where to collect samples, how many samples to collect, how and when to collect them, and what they will be tested for. The DQO meetings are held as technical meetings and the results of the meeting will be documented in the meeting minutes. The first DQO meeting for OU6 will be held within 60 days of the signing of the ROD for OU3. The final output from the DQO process is the work plan. The draft, draft final, and final versions of the work plan for OU6 will be provided to the regulators and RAB for review and comment. The final work plan will be complete and ready to use when the JILF cap is complete.

2.13 STATUTORY DETERMINATIONS

Statutory requirements of CERCLA Section 121 include: (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5)

satisfy the preference for treatment that reduces toxicity, mobility, or volume as a principal element, or provide an explanation as to why this preference is not satisfied. The following provides a discussion of how the remedy for OU3 meets the statutory requirements, as appropriate.

The selected remedy for OU3 includes a hazardous waste landfill cover, institutional controls, erosion controls, and monitoring. The remedy will prevent human exposure to unacceptable levels of contaminated soils and/or wastes and groundwater, prevent erosion of contaminated soils and/or waste on the edge of the landfill, and provides for current and future land uses of OU3 while providing sufficient protection of human health and the environment.

The cover will be constructed to meet the RCRA hazardous waste landfill closure and post-closure requirements and the Maine Hazardous Waste Management Rules provisions pertaining to hazardous waste landfill covers, as well as other ARARs. All ARARs will be met as discussed in Appendix C.

The selected remedy is the most cost-effective remedy that provides a permanent remedy to the maximum extent practicable and meets the MEDEP's requirement for a hazardous waste landfill cover for OU3.

The remedy for OU3 does not satisfy the statutory preference for treatment as a principal element of the remedy because implementation of a treatment option for OU3 would be difficult. This is because OU3 is a large (approximately 25 acres) heterogeneous landfill that ceased landfill operations before 1980 and the chemistry data for soil and groundwater within the boundary of OU3 indicate low to moderate concentrations of a mixture of chemicals (organic and inorganic) dispersed throughout the landfill area. Therefore, treatment options as a principal element of the remedy are not practicable for the landfill size or for the mixture of landfill material. Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, 5-year reviews will be conducted to ensure that the remedy is, or will be, protective of human health and the environment.

2.14 DOCUMENTATION OF SIGNIFICANT CHANGES FROM PREFERRED ALTERNATIVE OF PROPOSED PLAN

To fulfill the requirements of CERCLA Section 117(b), this ROD must document and discuss the reasons for significant changes made to the selected remedy from the time the PRAP is released for public comment to the final selection of the remedy. The public comment period for the PRAP for OU3 was held from January 31, 2001 through March 1, 2001. The PRAP identified Alternative 3 as the Navy's proposed remedial action for OU3. All written and verbal comments submitted during the public comment period

were reviewed. Upon review of these comments no significant changes to the remedy, as identified in the PRAP for OU3, were necessary.

2.15 STATE ROLE

The MEDEP has reviewed the various alternatives and has indicated its support for the selected remedy. The MEDEP has also reviewed the Feasibility Study Report for Operable Unit 3 and supporting documents to determine whether the selected remedy is in compliance with State ARARs and facility siting laws and regulations. The MEDEP concurs with the selected remedy for addressing soil and groundwater within the JILF boundary (OU3). A copy of the MEDEP's concurrence letter is included in Appendix A

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TABLE 2-1

SUMMARY OF CANCER RISKS, HAZARD INDICES, AND LEAD MODELING RESULTS (RME) FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 3

SITE 8/9⁽¹⁾

Receptor	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 ⁻⁴	Chemicals with Cancer Risks >10 ⁻⁵	Chemicals with Cancer Risks >10 ⁻⁶	Hazard Index	Chemicals with HI > 1	Is Lead a COC? ⁽²⁾
Construction Worker (Surface and Subsurface Soil)	Ingestion	2.4E-06	--	--	--	0.83	--	Yes
	Dermal Contact	3.2E-06	--	--	Benzo(a)pyrene (1.3E-06)	0.49	--	
	Inhalation	5.1E-09	--	--	--	2.6E-04	--	
	Total	5.6E-06	--	--	Benzo(a)pyrene (2.0E-06) Dibenzo(a,h)anthracene (1.0E-06) Arsenic (1.8E-06)	1.3	--	
Occupational Worker (Surface Soil)	Ingestion	7.2E-06	--	--	Benzo(a)pyrene (2.2E-06) Dibenzo(a,h)anthracene (1.2E-06) Arsenic (3.1E-06)	0.068	--	No
	Dermal Contact	4.8E-05	--	Benzo(a)pyrene (1.9E-05) Dibenzo(a,h)anthracene (1.1E-05) Arsenic (1.3E-05)	Benzo(a)anthracene (2.0E-06) Benzo(b)fluoranthene (2.3E-06) Indeno(1,2,3-cd)pyrene (1.3E-06)	0.25	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	5.5E-05	--	Benzo(a)pyrene (2.1E-05) Dibenzo(a,h)anthracene (1.2E-05) Arsenic (1.6E-05)	Benzo(a)anthracene (2.3E-06) Benzo(b)fluoranthene (2.6E-06) Indeno(1,2,3-cd)pyrene (1.4E-06)	0.32	--	
Recreational User (Adult) (Surface Soil)	Ingestion	1.2E-06	--	--	--	0.012	--	No
	Dermal Contact	1.6E-05	--	--	Benzo(a)pyrene (6.2E-06) Dibenzo(a,h)anthracene (3.5E-06) Arsenic (4.4E-06)	0.086	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	1.7E-05	--	--	Benzo(a)pyrene (6.5E-06) Dibenzo(a,h)anthracene (3.7E-06) Arsenic (5.0E-06)	0.097	--	
Recreational User (Child) (Surface Soil)	Ingestion	2.8E-06	--	--	Arsenic (1.2E-06)	0.11	--	NA
	Dermal Contact	1.1E-05	--	--	Benzo(a)pyrene (4.2E-06) Dibenzo(a,h)anthracene (2.4E-06) Arsenic (3.0E-06)	0.23	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	1.4E-05	--	--	Benzo(a)pyrene (5.1E-06) Dibenzo(a,h)anthracene (2.9E-06) Arsenic (4.2E-06)	0.34	--	

TABLE 2-1

SUMMARY OF CANCER RISKS, HAZARD INDICES, AND LEAD MODELING RESULTS (RME) FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 2 OF 3

SITE 8/9 (Continued)

Receptor	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 ⁻⁴	Chemicals with Cancer Risks >10 ⁻⁵	Chemicals with Cancer Risks >10 ⁻⁶	Hazard Index	Chemicals with HI > 1	Is Lead a COC? ⁽²⁾
On-Site Resident (Adult and Child) (Surface Soil)	Ingestion	2.3E-05	--	Arsenic (1.0E-05)	Benzo(a)pyrene (7.0E-06) Dibenzo(a,h)anthracene (4.0E-06)	NA	--	NA
	Dermal Contact	7.8E-05	--	Benzo(a)pyrene (3.0E-05) Dibenzo(a,h)anthracene (1.7E-05) Arsenic (2.2E-05)	Benzo(a)anthracene (3.3E-06) Benzo(b)fluoranthene (3.7E-06) Indeno(1,2,3-cd)pyrene (2.0E-06)	NA	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	1.0E-04	--	Benzo(a)pyrene (3.7E-05) Dibenzo(a,h)anthracene (2.1E-05) Arsenic (3.2E-05)	Benzo(a)anthracene (4.1E-06) Benzo(b)fluoranthene (4.6E-06) Indeno(1,2,3-cd)pyrene (2.5E-06)	NA	--	
On-Site Resident (Adult) (Surface Soil)	Ingestion	NA	--	--	--	0.068	--	NA
	Dermal Contact	NA	--	--	--	0.25	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	NA	--	--	--	0.31	--	
On-Site (Child) (Surface Soil)	Ingestion	NA	--	--	--	0.63	--	No
	Dermal Contact	NA	--	--	--	0.68	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	NA	--	--	--	1.3	--	
On-Site Resident (Adult and Child) (Groundwater) (shallow / deep freshwater wells)	Ingestion	6.7E-04	Arsenic (6.6E-04)	--	1,4-dichlorobenzene (1.8E-06) Benzene (1.3E-06)	NA	--	NA
	Dermal Contact	NA	--	--	--	NA	--	
	Inhalation ⁽³⁾	NA	--	--	--	NA	--	
	Total	6.7E-04	Arsenic (6.6E-04)	--	1,4-dichlorobenzene (1.8E-06) Benzene (1.3E-06)	NA	--	
On-Site Resident (Adult) (Groundwater) (shallow / deep freshwater wells)	Ingestion	NA	--	--	--	3.8	Arsenic (2.7)	NA
	Dermal Contact	NA	--	--	--	NA	--	
	Inhalation ⁽³⁾	NA	--	--	--	NA	--	
	Total	NA	--	--	--	3.8	Arsenic (2.7)	
On-Site Resident (Child) (Groundwater) (shallow / deep freshwater wells)	Ingestion	NA	--	--	--	8.9	Arsenic (6.4)	No
	Dermal Contact	NA	--	--	--	NA	--	
	Inhalation ⁽³⁾	NA	--	--	--	NA	--	
	Total	NA	--	--	--	8.9	Arsenic (6.4)	

TABLE 2-1

SUMMARY OF CANCER RISKS, HAZARD INDICES, AND LEAD MODELING RESULTS (RME) FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

PAGE 3 OF 3

SITE 11⁽⁴⁾

Receptor	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁵	Chemicals with Cancer Risks > 10 ⁻⁶	Hazard Index	Chemicals with HI > 1	Is Lead a COC? ⁽²⁾
Construction Worker (Subsurface Soil)	Ingestion	1.2E-05	--	--	Benzo(a)anthracene (1.0E-06) Benzo(a)pyrene (7.4E-06) Arsenic (1.8E-06)	0.52	--	Yes
	Dermal Contact	1.9E-05	--	Benzo(a)pyrene (1.3E-05)	Benzo(a)anthracene (1.8E-06) Benzo(b)fluoranthene (1.3E-06) Dibenzo(a,h)anthracene (1.3E-06) Arsenic (1.6E-06)	0.25	--	
	Inhalation	NA	--	--	--	NA	--	
	Total	3.1E-05	--	Benzo(a)pyrene (2.0E-05)	Benzo(a)anthracene (2.8E-06) Benzo(b)fluoranthene (2.0E-06) Dibenzo(a,h)anthracene (2.0E-06) Arsenic (3.4E-06)	0.76	--	

On-Site Resident (Adult and Child) (Groundwater) (Shallow / deep freshwater wells)	Ingestion	3.2E-04	Arsenic (3.2E-04)	--	--	NA	--	NA
	Dermal Contact	NA	--	--	--	NA	--	
	Inhalation ⁽³⁾	NA	--	--	--	NA	--	
	Total	3.2E-04	Arsenic (3.2E-04)	--	--	NA	--	
On-Site Resident (Adult) (Groundwater) (Shallow / deep freshwater wells)	Ingestion	NA	--	--	--	1.5	Arsenic (1.3)	NA
	Dermal Contact	NA	--	--	--	NA	--	
	Inhalation ⁽³⁾	NA	--	--	--	NA	--	
	Total	NA	--	--	--	1.5	Arsenic (1.3)	
On-Site Resident (Child) (Groundwater) (Shallow / deep freshwater wells)	Ingestion	NA	--	--	--	3.4	Arsenic (3.0)	No
	Dermal Contact	NA	--	--	--	NA	--	
	Inhalation ⁽³⁾	NA	--	--	--	NA	--	
	Total	NA	--	--	--	3.4	Arsenic (3.0)	

- Risk estimates for the construction worker exposed to groundwater (shallow freshwater/saline wells) were less than risk guidelines (e.g., cancer risks were less than or within the USEPA target risk range of 10⁻⁶ to 10⁻⁴ and less than the MEDEP risk guideline of 10⁻⁵ and noncancer risks were less than 1).
- Lead is selected as a Chemical of Concern (COC) if blood lead levels in the receptor of concern (i.e., the fetus of a pregnant woman) exceeds the EPA benchmark of 10 ug/dL.
- Risks due to the inhalation pathway are qualitatively assumed to be equal to risks quantitatively assessed for the ingestion pathway when VOCs are predominant COPCs. Thus, the total risk from volatile compounds in water through household use may be doubled.
- No surface soil samples were collected for Site 11. All receptors are assumed only to be exposed to subsurface soil. An evaluation of the hypothetical future resident exposure to subsurface soil is included in the appendices of the Revised OU3 Risk Assessment.

TABLE 2-2

**SUMMARY OF CHEMICALS OF CONCERN AND MEDIUM -SPECIFIC⁽¹⁾
EXPOSURE POINT CONCENTRATIONS (RME)
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 2**

Chemical of Concern	Exposure Point	Concentration Detected		Units	Frequency of Detection	Exposure Point	Statistical Measure
		Min	Max			Concentration	
Surface (SS)/Subsurface Soils (SB)							
Benzo(a) pyrene	SS Site 8/9	0.04	7.9	mg/kg	11/25	1.43	95 % UCL
	SS/SB Site 8/9	0.04	12	mg/kg	21/47	1.5	95 % UCL
	SB Site 11	0.11	50	mg/kg	10/15	15.1	95 % UCL
Benzo(a) anthracene	SS Site 8/9	0.057	10	mg/kg	11/25	1.57	95 % UCL
	SS/SB Site 8/9	0.057	14	mg/kg	20/47	1.83	95 % UCL
	SB Site 11	0.11	60	mg/kg	10/15	20.9	95 % UCL
Benzo (b) fluoranthene	SS Site 8/9	0.039	7.8	mg/kg	12/25	1.78	95 % UCL
	SS/SB Site 8/9	0.039	14	mg/kg	24/47	1.89	95 % UCL
	SB Site 11	0.12	52	mg/kg	10/15	14.7	95 % UCL
Dibenzo (a,h) anthracene	SS Site 8/9	0.05	2.6	mg/kg	3/25	0.81	95 % UCL
	SS/SB Site 8/9	0.05	2.6	mg/kg	7/47	0.77	95 % UCL
	SB Site 11	0.089	5.6	mg/kg	3/15	1.49	95 % UCL
Indeno (1,2,3-cd) pyrene	SS Site 8/9	0.041	4.6	mg/kg	9/25	0.99	95 % UCL
	SS/SB Site 8/9	0.041	4.9	mg/kg	18/47	0.94	95 % UCL
	SB Site 11	0.18	16	mg/kg	7/15	3.5	95 % UCL
Arsenic	SS Site 8/9	0.9	19.2	mg/kg	29/30	9.97	95 % UCL
	SS/SB Site 8/9	0.9	26.6	mg/kg	53/55	9.63	95 % UCL
	SB Site 11	7.8	30.6	mg/kg	15/15	17.7	95 % UCL
Lead ⁽²⁾	SS/SB Site 8/9	6	5510	mg/kg	55/55	416/274	95 % UCL/ Arithmetic Mean
	SS/SB Site 11	13.2	899	mg/kg	15/15	598/184	95 % UCL/ Arithmetic Mean

TABLE 2-2

**SUMMARY OF CHEMICALS OF CONCERN AND MEDIUM -SPECIFIC⁽¹⁾
EXPOSURE POINT CONCENTRATIONS (RME)
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 2 OF 2**

Chemical of Concern	Exposure Point	Concentration Detected		Units	Frequency of Detection	Exposure Point	Statistical Measure
		Min	Max			Concentration	
Groundwater (GW)							
Benzene	Fresh GW Site 8/9	2	3	ug/L	5/28	3	Maximum
Arsenic	Fresh GW Site 8/9	2.7	103	ug/L	16/28	29.8	95% UCL
	Fresh GW Site 11	2.1	14.1	ug/L	2/8	14.1	Maximum
Antimony ⁽³⁾	Fresh GW Site 8/9	1.6	41.5	ug/L	5/28	5.4	95% UCL
	Fresh GW Site 11	ND	ND	NA	NA	NA	NA
Cadmium ⁽³⁾	Fresh GW Site 8/9	0.67	6.85	ug/L	3/28	0.83	95% UCL
	Fresh GW Site 11	ND	ND	NA	NA	NA	NA
Lead ⁽³⁾	Fresh GW Site 8/9	0.8	19.8	ug/L	12/28	8.58	95% UCL
	Fresh GW Site 11	NA	NA	NA	NA	NA	NA
Nickel ⁽³⁾	Fresh GW Site 8/9	0.8	526.5	ug/L	15/28	46.1	95% UCL
	Fresh GW Site 11	NA	NA	NA	NA	NA	NA
Thallium ⁽³⁾	Fresh GW Site 8/9	5.7	5.7	ug/L	1/28	5.7	Maximum
	Fresh GW Site 11	ND	ND	NA	NA	NA	NA

Notes:

- The table presents the chemicals of concern (COCs) and exposure point concentration for each of the COCs detected in soil (i.e., the concentration that will be used to estimate the exposure and risk from each COC in the soil) and groundwater. The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the exposure point concentration (EPC), and how the EPC was derived. This table indicates that the carcinogenic PAHs and arsenic are the primary COCs identified for OU3 surface and subsurface soils. Benzene and several metals are identified as primary COCs for groundwater.
 - Lead is listed as a COC only because of potential "hotspots" (e.g., there is a cluster of lead concentrations at the southern boundary of JILF landfill). Although maximum detected lead concentrations exceed USEPA benchmarks for receptor exposure, the arithmetic mean lead concentrations for Sites 8/9 and 11 are below benchmarks established for the USEPA.
 - These metals presented as COCs because maximum detected concentration exceeds Federal SDWA MCLs or State of Maine MEGs.
- ND = Not detected.
NA = Not available or not applicable.
95% UCL = 95% Upper Confidence limit on the Arithmetic Mean

TABLE 2-3
CANCER AND NON-CANCER TOXICITY DATA SUMMARY FOR OU3 COCS⁽¹⁾
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 4

Pathway : Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Cancer Slope factor	Units	Weight of Evidence/Cancer Guideline Description	Source	Date
---------------------	-----------	-------	--------------------------------	-------	---	--------	------

Soils

Benzo(a)pyrene	-	-	3.1	(mg/kg)/day	B2	IRIS	1998
Benzo(a)anthracene	-	-	0.31	(mg/kg)/day	B2	IRIS	1998
Benzo(b)fluoranthene	-	-	0.31	(mg/kg)/day	B2	IRIS	1998
Dibenzo(a,h)anthracene	-	-	3.1	(mg/kg)/day	B2	IRIS	1998
Indeno(1,2,3-cd)pyrene	-	-	0.31	(mg/kg)/day	B2	IRIS	1998
Arsenic	0.0043	ug/m ³	15.1	(mg/kg)/day	A	IRIS	1998
Lead	-	-	-	-	B2	IRIS	1998

Groundwater

Benzene	2.2E-6 - 7.86E-6	ug/m ³	0.029	(mg/kg)/day	A	IRIS	1998
1,4- Dichlorobenzene	-	-	0.02	(mg/kg)/day	-	IRIS	1998
Arsenic	0.0043	ug/m ³	15.1	(mg/kg)/day	A	IRIS	1998
Antimony	-	-	-	-	-	IRIS	1998
Cadmium	0.0018	ug/m ³	6.3	(mg/kg)/day	B1	IRIS	1998
Lead	-	-	-	-	B2	IRIS	1998
Nickel	-	-	-	-	-	IRIS	1998
Thallium	-	-	-	-	D	IRIS	1998

TABLE 2-3

CANCER AND NON-CANCER TOXICITY DATA SUMMARY FOR OU3 COCS ⁽¹⁾
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 2 OF 4

Pathway: Ingestion, Dermal

Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer ⁽²⁾ Slope Factor	Slope Factor Units	Weight of Evidence/Cancer Guideline Description	Source	Date
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Soils

Benzo(a) pyrene	7.3	8.2	(mg/kg)/day	B2	IRIS	1998
Benzo(a) anthracene	0.73	0.82	(mg/kg)/day	B2	IRIS	1998
Benzo (b) fluoranthene	0.73	0.82	(mg/kg)/day	B2	IRIS	1998
Dibenzo (a,h) anthracene	7.3	8.2	(mg/kg)/day	B2	IRIS	1998
Indeno (1,2,3-cd) pyrene	0.73	0.82	(mg/kg)/day	B2	IRIS	1998
Arsenic	1.5	3.66	(mg/kg)/day	A	IRIS	1998
Lead	-	-	-	B2	IRIS	1998

Groundwater

Benzene	0.029	0.0299	(mg/kg)/day	A	IRIS	1998
Arsenic	1.5	3.66	(mg/kg)/day	A	IRIS	1998
Antimony ⁽³⁾	-	-	-	-	-	-
Cadmium ⁽³⁾	-	-	-	-	-	-
Lead	-	-	-	B2	IRIS	1998
Nickel ⁽³⁾	-	-	-	-	-	-
Thallium ⁽³⁾	-	-	-	-	-	-

TABLE 2-3
CANCER AND NON-CANCER TOXICITY DATA SUMMARY FOR OU3 COCS⁽¹⁾
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 3 OF 4

Pathway : Inhalation

Chemical of Concern	Chronic/Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD	Inhalation RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Dates of RfD; Target Organ	Dates of RfD; Target Organ
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Soils

Benzo(a) pyrene	Chronic	-	-	-	-	-	-	IRIS	1998
Benzo(a) anthracene	Chronic	-	-	-	-	-	-	IRIS	1998
Benzo (b) fluoranthene	Chronic	-	-	-	-	-	-	IRIS	1998
Dibenzo (a,h) anthracene	Chronic	-	-	-	-	-	-	IRIS	1998
Indeno (1,2,3-cd) pyrene	Chronic	-	-	-	-	-	-	IRIS	1998
Arsenic	Chronic	-	-	-	-	Skin, Vascular	-	IRIS	1998
Lead	Chronic	-	-	-	-	-	-	IRIS	1998

Groundwater

Benzene	Chronic	-	-	0.00173	(mg/kg)/day	-	-	IRIS	1998
Arsenic	Chronic	-	-	-	-	Skin, Vascular	-	IRIS	1998
Antimony	Chronic	-	-	-	-	Blood, Lifespan	-	IRIS	1998
Cadmium	Chronic	-	-	-	-	Kidney	-	IRIS	1998
Lead	Chronic	-	-	-	-	-	-	IRIS	1998
Nickel	Chronic	-	-	-	-	Body Weight	-	IRIS	1998
Thallium	Chronic	-	-	-	-	Blood, Hair Loss, Liver	-	IRIS	1998

TABLE 2-3

CANCER AND NON-CANCER TOXICITY DATA SUMMARY FOR OU3 COCS⁽¹⁾
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 4 OF 4

Pathway : Ingestion, Dermal

Chemical of Concern	Chronic/Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD ⁽²⁾	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD; Target Organ	Dates of RfD; Target Organ
Soils									
Benzo(a) pyrene	-	-	-	-	-	-	-	-	-
Benzo(a) anthracene	-	-	-	-	-	-	-	-	-
Benzo (b) fluoranthene	-	-	-	-	-	-	-	-	-
Dibenzo (a,h) anthracene	-	-	-	-	-	-	-	-	-
Indeno (1,2,3-cd) pyrene	-	-	-	-	-	-	-	-	-
Arsenic	Chronic	0.0003	(mg/kg)/day	0.000123	(mg/kg)/day	Skin, Vascular	3	IRIS	1998
Lead	-	-	-	-	-	-	-	-	-
Groundwater									
Benzene	Chronic	0.003	(mg/kg)/day	0.00291	(mg/kg)/day	Blood	-	EPA-NCEA	1998
Arsenic	Chronic	0.0003	(mg/kg)/day	0.000123	(mg/kg)/day	Skin, Vascular	3	IRIS	1998
Antimony ⁽³⁾	Chronic	0.0004	(mg/kg)/day	0.000008	(mg/kg)/day	Blood, Lifespan	1000	IRIS	1998
Cadmium ⁽³⁾	Chronic	0.0005	(mg/kg)/day	0.000005	(mg/kg)/day	Kidney	10	IRIS	1998
Lead ⁽³⁾	-	-	-	-	-	-	-	-	-
Nickel ⁽³⁾	Chronic	0.02	(mg/kg)/day	0.0054	(mg/kg)/day	Body Weight	300	IRIS	1998
Thallium ⁽³⁾	Chronic	0.00007	(mg/kg)/day	0.0000105	(mg/kg)/day	Blood, Hair Loss, Liver	3000	IRIS	1998

Notes:

- 1 This table provides carcinogenic and noncarcinogenic risk information which is relevant to the contaminants of concern in both soil and ground water. At this time, the slope factors and RfDs are not available for the dermal route of exposure. Thus, dermal slope factors used in the assessment have been extrapolated from oral values. An adjustment factor is sometimes applied and is dependent upon how well the chemical is absorbed via the oral route. Adjustments are particularly important for chemicals with less than 50% absorption via the ingestion route.
The cancer slope factors and reference doses for the inhalation route of exposure are not provided because they were not needed/used in the assessment of these COCS.
- 2 Per the Revised OU3 Risk Assessment gastrointestinal absorption factors provided in the USEPA, Region IV Table 6 reference (Feb., 1996) were used to calculate dermal toxicity criteria.
- 3 These metals are only listed as COCs because maximum detected concentrations exceeded Federal SDWA MCLs or State of Maine MEGs.

Key:

-: No information available.

EPA NCEA: Environmental Protection Agency, National Center for Environmental Assessment

IRIS: Integrated Risk Information Systems, U.S. EPA

HEAST: Health Effects Assessment Summary Table (FY 1997)

EPA Group:

- A - Human carcinogen
- B1 - Probable human carcinogen - Indicates that limited human data are available.
- B2 - Probable human carcinogen - Indicates sufficient evidence in animals and inadequate or no evidence in humans.
- C - Possible human carcinogen.
- D - Not classifiable as a human carcinogen.
- E - Evidence of noncarcinogenicity.

TABLE 2-4

**SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

Criteria for Selecting a Remedial Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Overall protection of Human Health and the Environment	Low	High	High	High
Compliance with ARARs	NA	Complies*	Complies	Complies
Reduction of Toxicity, Mobility, or Volume through Treatment	None	None	None	None
Short-term Effectiveness	NA	High	Moderate/High	Moderate
Long-term Effectiveness and Permanence	Low	Moderate	Moderate	Moderate
Implementability	Very easy	Easy	More difficult than Alternative 2	More difficult than Alternative 3
State Acceptance	Alternatives 1 and 2 are not acceptable to the MEDEP. Alternatives 3 and 4 both meet MEDEP's capping requirements.			
Community Acceptance**	The community does not support Alternatives 1 and 2. The community supports covering the JILF with a hazardous waste cover (as in Alternatives 3 or 4).			
<u>Cost</u>				
Capital Cost	\$0	\$2,127,000	\$10,198,000	\$13,022,000
Present-worth (30-year)	\$0	\$3,342,000	\$11,676,000	\$14,499,000
Annual Operating Cost				
First Year	\$0	\$55,000	\$55,000	\$55,000
Per Year	\$0	\$88,000	\$96,000	\$96,000
Every 5 Years	NA	\$12,000	\$70,000	\$70,000
Every 10 Years	NA	NA	\$167,000	\$167,000

NA - not applicable

* Alternative 2 does not include a cover; therefore, under CERCLA capping regulations are not ARARs.

** See Section 3.0, Responsiveness Summary for the discussion of public comments and concerns raised during the public comment period for the PRAP for OU3.

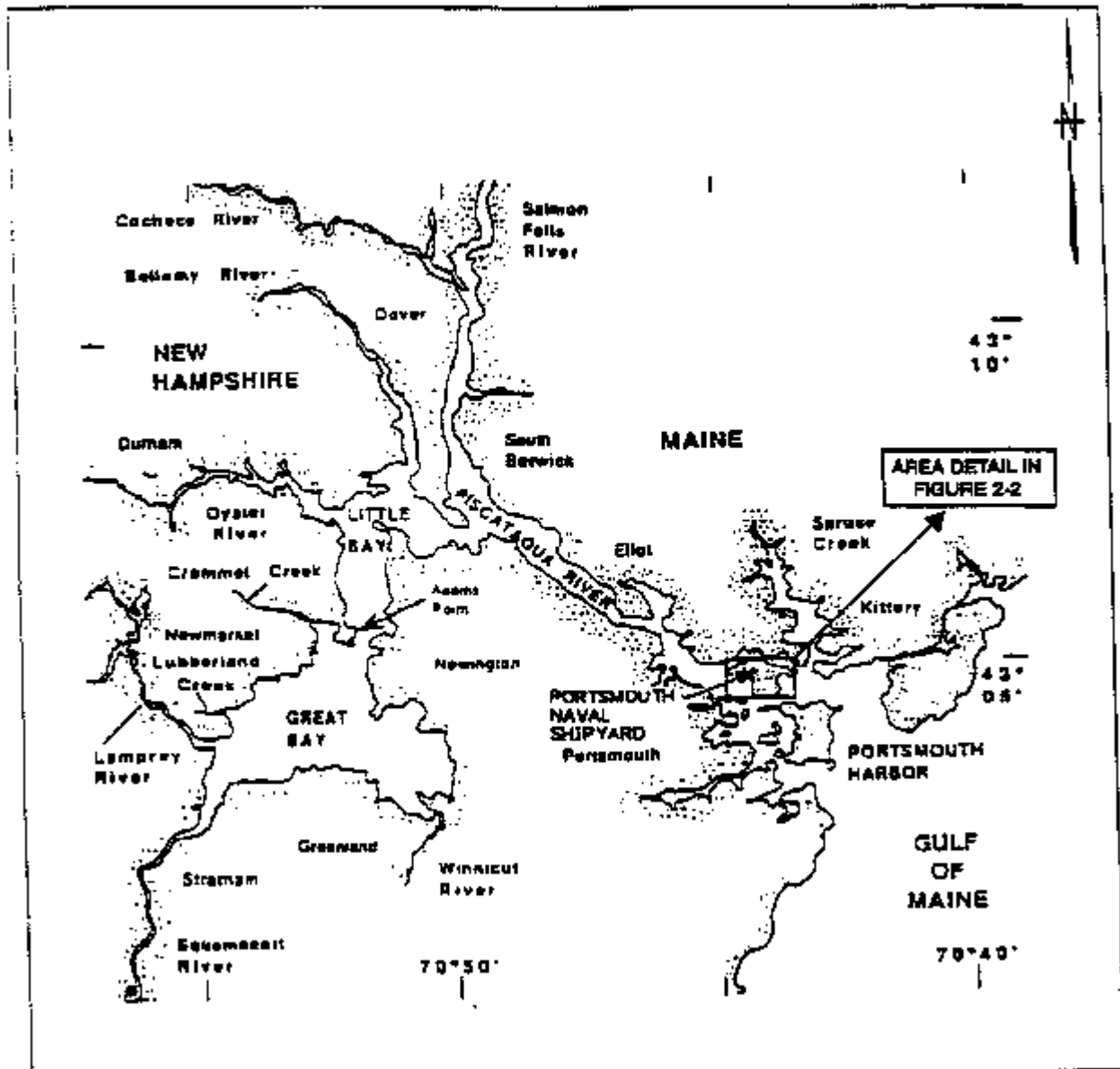
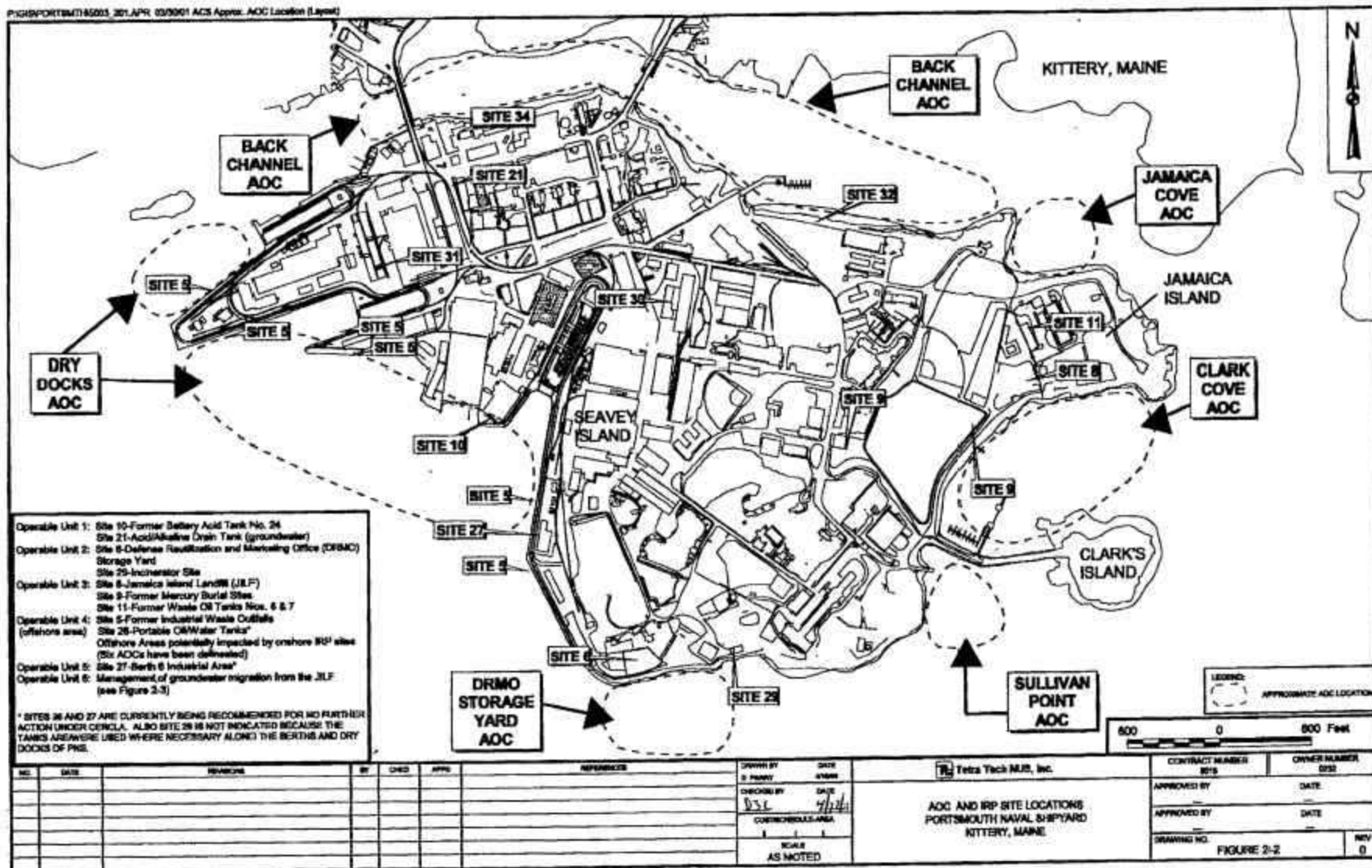


FIGURE 2-1

**GREAT BAY ESTUARY AND PORTSMOUTH NAVAL SHIPYARD LOCATION
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

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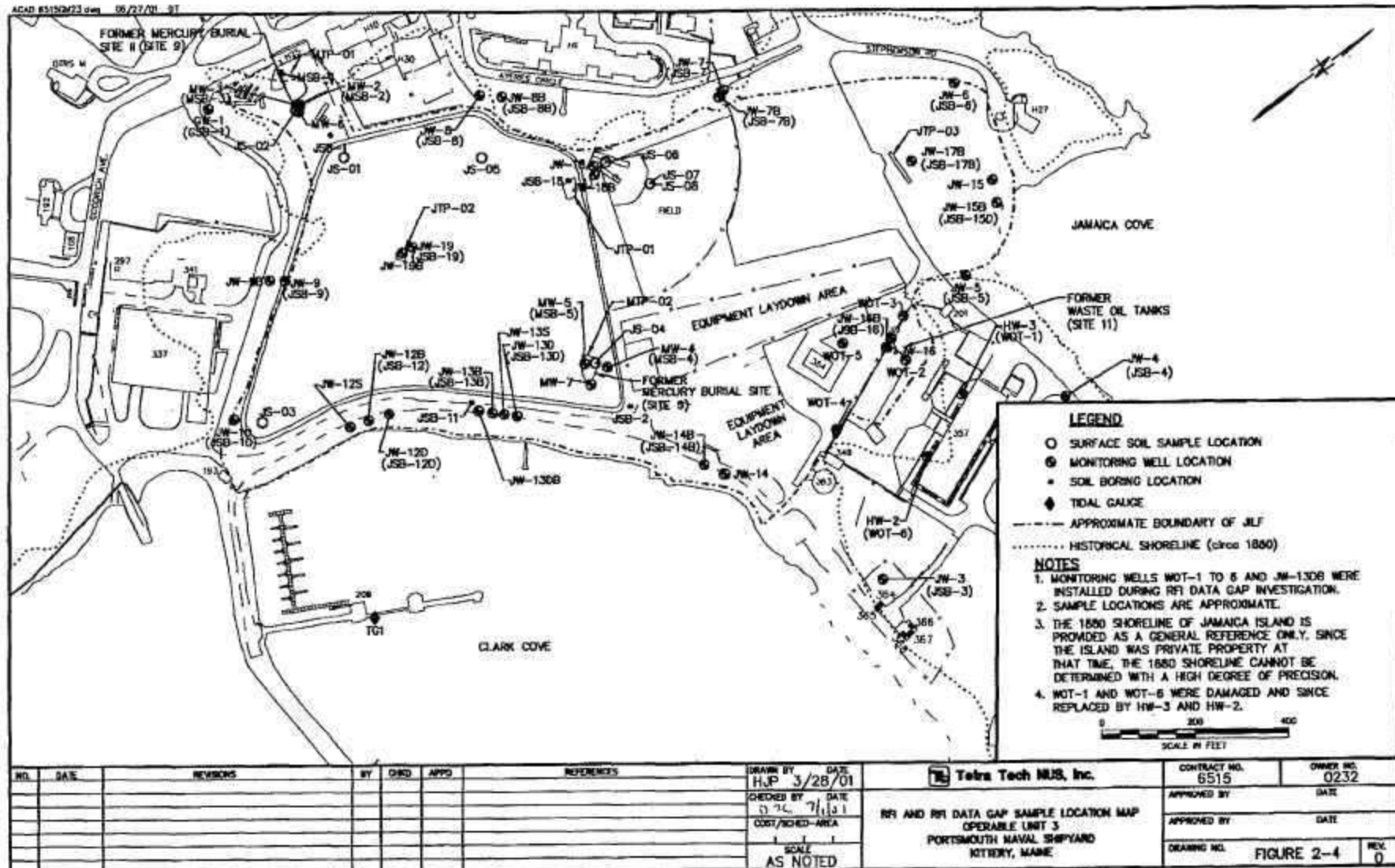
FIGURE 2-2: AOC Location (Layout)



ACAD:BS150422.dwg 06/27/06 01



ACAD 85152/23.dwg 08/27/01 JT



FORM CARS NO. 1700-10-1 - REV 8 - 1/19/78



Map of Clark Cove showing various areas to be capped and other features:

- FORMER MERCURY BURIAL SITE 1 (SITE 8)
- ASPHALT AREA 1 (40,000 ft²) (TO BE CAPPED)
- RUNNING TRACK
- VEGETATED SOIL AREA 1 (308,000 ft²) (TO BE CAPPED)
- VEGETATED SOIL AREA 2 (97,000 ft²) (TO BE CAPPED)
- ASPHALT AREA 2 (392,000 ft²) (TO BE CAPPED)
- EQUIPMENT LAYDOWN AREA (TO BE CAPPED)
- EQUIPMENT LAYDOWN AREA (TO BE CAPPED)
- FORMER MERCURY BURIAL SITE 1 (SITE 9)
- PROPOSED SHORELINE EROSION CONTROLS LOCATION
- JAMAICA ISLAND LANDFILL (JILF) (SITE 8)
- FORMER WASTE OIL TANKS (SITE 11)
- INDUSTRIAL AREA (NOT TO BE CAPPED)
- CLARK COVE

SOURCE: FIGURE 8-5 AND FIGURE 8-6 OF FEASIBILITY STUDY REPORT

[illegible]

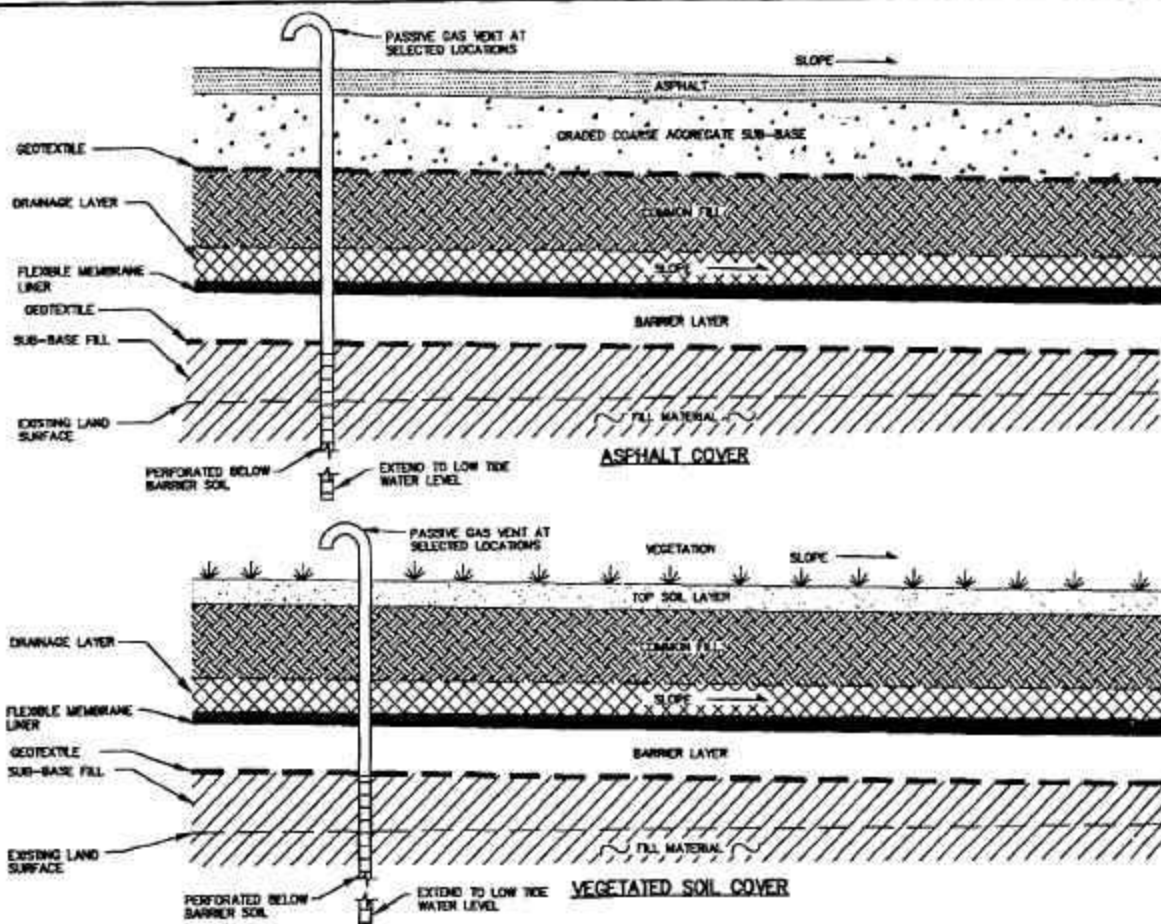
DRAWN BY	DATE
HJP	3/23/01
CHECKED BY	DATE
DLC	7/1/01
COST/RICHES-AREA	
SCALE	
AS NOTED	

Tetra Tech NUS, Inc.
CONCEPTUAL AREAS OF CAPPING
AND SHORELINE EROSION CONTROLS
OPERABLE UNIT 3
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

CONTRACT NO. 6515	OWNER NO. 0232
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-6	REV. 2

GAC105/P

ACAD:851AC005.dwg 02/26/01 H.P.



NOTE:

COVER CROSS-SECTIONS ARE BASED UPON RCRA SUBTITLE C REQUIREMENTS, USING STATE OF MAINE SOLID WASTE MANAGEMENT RULES AS GUIDANCE. SPECIFIC CAP COMPONENTS WILL BE DETERMINED DURING THE CAP DESIGN.

SOURCE: CONCEPTUAL VERSION OF FIGURE 8-7 OF THE FEASIBILITY STUDY REPORT

NO.	DATE	REVISIONS	BY	CHKD	APPRO	REFERENCES	DRAWN BY	DATE	CONTRACT NO.	OWNER NO.
							H.P.	5/23/01	6515	0232
							CHECKED BY	DATE	APPROVED BY	DATE
							D.Y.L.	7/13/01		
							CONFIRMED-AREA		APPROVED BY	DATE
							SCALE		DRAWING NO.	FIGURE 2-7
							NOT TO SCALE			REV. 0

Tetra Tech NUS, Inc.

CONCEPTUAL CAP CROSS SECTIONS
UNDER ALTERNATIVE 3
OPERABLE UNIT 3
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

3.0 RESPONSIVENESS SUMMARY

The Responsiveness Summary is a concise and complete summary of significant comments received from the public and includes responses to these comments. The Responsiveness Summary summarizes information about the views of the public and regulatory agencies regarding both the remedial action decision and general concerns about the site. It also documents in the record how public comments were integrated into the decision-making process and provides answers to major comments.

This Responsiveness Summary for the comments received on the Proposed Remedial Action Plan (PRAP) for Operable Unit 3 (OU3) at Portsmouth Naval Shipyard (PNS), Kittery, Maine was prepared after the public comment period (which ended on March 1, 2001) in accordance with guidance in "Community Relations in Superfund: A Handbook" (OSWER Directive 9230.0-3B, January 1992) and consists of the following three sections: An overview, the background on community involvement with the site, and a summary of the comments received on the PRAP and the Navy's responses.

Overview

The PRAP for OU3 as presented to the public identified a hazardous waste landfill cover, institutional controls, erosion controls, and monitoring to address soil and groundwater within the boundary of Jamaica Island Landfill (JILF) at PNS in Kittery, Maine.

Comments were received from 30 community members, 2 organizations (Clean Water Action and Seacoast Anti-Pollution League), and the City of Portsmouth. The majority of comments indicated concerns with the separation of the source control (OU3) remedy from the management of migration (OU6) remedy and the need for a cut-off barrier in addition to the landfill cover to protect human health and the environment. In addition, four comments indicated a preference for complete removal of the landfill and one comment indicated a preference for no action (Alternative 1).

Background on Community Involvement

The Navy solicits community involvement in PNS's Installation Restoration Program (IRP) throughout the remedial investigation and remedial action process through presentations at PNS's Restoration Advisory Board (RAB) meetings, by responding to comments from RAB members on documents provided for review and comment, and formally as part of public comment periods for specific documents. The following provides a discussion of community involvement for the remedy for OU3 through the RAB and as part of the public comment period on the PRAP for OU3.

RAB Involvement

The RAB generally meets every two months and provides the forum for discussion and exchange of information between the Navy, regulatory agencies, and the community on environmental restoration activities. It provides an opportunity for individual community members to participate in the decision-making process by providing input to the decision makers for various IRP sites, including OU3. RAB meeting minutes are prepared for each RAB meeting and are distributed to the RAB members for review. RAB updates are prepared for each meeting and distributed to the PNS IRP mailing list. The RAB community members are also invited to participate in technical meetings that are held to resolve specific issues related to the IRP sites. Technical meeting minutes are prepared for each technical meeting and distributed to the RAB members. RAB meeting minutes, RAB updates, and technical meeting minutes are also included in the Information Repositories for PNS.

The draft Feasibility Study Report for Operable Unit 3 was presented at the November 18, 1999 RAB. The Feasibility Study (FS) identifies and summarizes the evaluation of the potential cleanup alternatives being considered for the JILF. At the request of the RAB, specific components of the alternatives evaluated were presented in more detail at subsequent RAB meetings. These included conceptual presentations of the capping component at the May 25, 2000 meeting and the wetlands component of shoreline erosion controls at the August 3, 2000 meeting. The Navy made other additional presentations to the RAB concerning specific aspects of the FS and the proposed remedy for the JILF. These included a presentation on alternative components to address migration of groundwater (monitoring and/or containment systems) at the September 21, 2000 RAB, a presentation of the draft PRAP for OU3 at the November 30, 2000 RAB meeting, and a presentation of the Navy's decision to separate "source control" from "management of migration" at the November 30, 2000 RAB meeting.

Three technical meetings were held related to the development of the FS for OU3. The first meeting was held on February 10, 2000 to discuss alternative landfill covers. The second meeting, held on April 4, 2000, was organized to discuss and determine action items to resolve follow-up comments on the draft FS for OU3. The third meeting held on September 13, 2000, focused on discussing seep issues associated with the JILF.

In addition to the information presented at the meetings, the RAB also received copies of the documents produced as part of the FS and proposed remedy for the JILF. These included the draft, draft final, and final OU3 FS documents (including the interim submittals and responses to comments on the FS); the draft, draft final, and final version of the OU3 PRAP; and the Navy's OU3 FS Clarification Memorandum (dated November 21, 2000), which discusses the Navy's decision to separate OU3 and OU6. Comments

from the RAB members on these documents have been addressed by the Navy and responses were distributed to the RAB.

Public Participation During Public Comment Period

The public comment period for the PRAP for OU3 was held from January 31, 2001 through March 1, 2001. An Informational Open House was held on February 1, 2001 at the Courtyard Marriott in Portsmouth, New Hampshire. The meeting was held to provide a forum for the Navy to respond to public questions and concerns about the proposed cleanup remedy. The Public Hearing was held on February 22, 2001 at the Courtyard Marriott in Portsmouth, New Hampshire, where the Navy accepted oral public comments. Written comments were accepted throughout the public comment period.

Summary of Comments Received During The Public Comment Period and Navy Responses

During the public comment period, verbal comments were received from 16 community members and 2 organizations (Clean Water Action and SAPL) and written comments were received from 14 community members and from the City of Portsmouth. Additional written comments were also received from Clean Water Action. The transcript from the February 22, 2001 public hearing and a copy of the written comments are provided in Appendix B. The public comments have been separated into five categories; Comments on PRAP Alternatives; Comments on Separation of Operable Units and Monitoring of Seeps; Comments related to Human Health and Environmental Risk Concerns; Comments on the CERCLA Process; and Additional Comments. A summary of the comments with responses is provided below.

Comments on PRAP Alternatives

Comment 1: A cut-off barrier in addition to the cap (proposed in Alternative 3) is needed at this site to address tidal impacts to the sites, including impacts from migration of groundwater/seeps offshore, from sea level rise, and storm events.

Response: The Navy recognizes concerns have been expressed by members of the community related to the need for a cut-off barrier at the JILF. Based on available information, the Navy, USEPA, and MEDEP have determined that a cut-off barrier is not necessary at this time. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process is a risk-driven process. As part of this process, the Navy uses USEPA risk assessment methodology to identify potential risks to human health and the environment associated with a site and to calculate the risk ranges. If a site is found to pose an unacceptable risk to human health or the environment, then possible remedies to address these risks are identified and evaluated in an FS. Based on available information, the migration of groundwater offshore from the JILF does not represent a current or potential future risk that requires a

cut-off barrier. The tidal impacts to the landfill were considered as part of these evaluations. The studies included groundwater fate and transport modeling to evaluate the potential for chemicals in the soil and groundwater at OU3 to move in the environment. The modeling used a conservative approach to estimate the potential current and future impacts on the groundwater from chemicals in the soil. The modeling assumed the maximum soil concentrations detected in the landfill (regardless of whether or not it was in contact with groundwater) were the average concentrations throughout the landfill. The modeling also assumed that the source was constant over time (i.e., the source did not get any smaller) and the source was located one foot from the shoreline. So the modeling conducted should be a worst case estimate of current and future potential impacts to groundwater from tidal impacts to the landfill.

Review of available information on global warming and sea level rise show there is a wide range of opinions and conflicting information on the time frame and rate for sea level rise (some even predict a lowering of the sea level). Based on the USEPA's "The Probability of Sea Level Rise" (EPA 230-R-95-008), global warming is most likely to raise sea level 15 cm (approximately 6 inches) by the year 2050 (which is approximately 0.27 cm/year or 0.10 inches/year) and 34 cm (approximately 13 inches) by the year 2100 (which is approximately 0.32 cm/year or 0.12 inches/year). But they expect the rate will be less because of efforts to reduce pollutant emissions, and USEPA estimates these emission reduction efforts could cut the rate of sea level rise in half by the year 2025.

There are uncertainties related to global warming and associated sea level rise and increased storm events. Also, the various investigations conducted at the JILF indicate a low potential of hazardous wastes/materials at high concentrations or that are likely to move through the groundwater to adversely impact the offshore. Therefore, the Navy believes a cut-off barrier to address potential tidal impacts on the JILF is not justified at this time.

The Navy recognizes the public's concern regarding consideration of sea level rise/increased storm events in the remedy for the OU3. The Navy believes monitoring, routine inspections and maintenance (particularly of the cap and shoreline erosion controls), and 5-year reviews that will be conducted as part of the remedy for OU3 can address the public's concerns related to impact of sea level rise/storm events on the JILF. Based on these activities, the Navy will evaluate impacts to the effectiveness of the remedy (including from rising sea level and storm events) and conduct additional action as necessary to ensure the remedy remains protective of human health and the environment in the long-term. In addition, the Navy will conduct additional investigation related to potential impacts from migration of groundwater to the offshore as part of OU6. Additional information related to management of migration and OU6 are provided in the responses to Comments 13 and 15.

In terms of consideration of sea level rise and increase storm events expected as part of global warming in the design of the cap component of the OU3 remedy, based on the Navy's previous experience at other coastal landfills, the extent of synthetic materials in the vicinity of the shoreline have been governed by slope stability concerns using a 100-year flood elevation. Assuming a higher sea level elevation from global warming may result in greater slope stability concerns than with a 100-year flood elevation. Therefore, the Navy believes that accounting for sea level rise as part of the design of the cap, given the uncertainties related to the sea level rise, would impact the function and quality of the cap design. The Navy believes that the shoreline erosion controls that will be provided to protect the JILF shoreline from erosion should provide some protection from the impacts from increased number and severity of storms that are expected to come with the rise in sea level.

The Navy welcomes suggestions from the public on how their concerns could be addressed further as part of the remedial design for OU3 or other activities as part of the Navy's environmental restoration program at PNS. Please contact the PNS Public Affairs Office at 207-438-1140 for information on how to provide suggestions to the Navy.

Comment 2: The long-term monitoring program as part of the selected alternative should consider continuous monitoring and real time monitoring to identify whether there is any change in conditions at the site that may result in releases of hazardous materials from the site. Also, what contingency actions will be conducted based on the results of the monitoring?

Response: Monitoring is required whenever waste is left in place, and is included as a component of the remedy selected for the JILF. The specifics of the monitoring program, including what to sample, when and how often to take samples, what to test the samples for, how to evaluate the data, and what actions are required based on this evaluation, will be developed after the Record of Decision (ROD) for OU3 is signed. The Navy plans to use the USEPA's Data Quality Objective (DQO) process for the development of the monitoring program for OU3. DQO meetings will be held as technical meetings and the results of the meeting will be documented in the meeting minutes. The final output from the DQO process will be the monitoring plan for OU3 and draft, draft final, and final versions of the monitoring plan will be provided to the regulators and RAB for review and comment.

During development of the monitoring program, the Navy will identify the specific decision points that will be made based on evaluation of the data collected. The decision points will be identified as part of the monitoring program development. The decisions may require additional and/or more frequent monitoring or additional action, as necessary to provide for long-term effectiveness of the remedy. A formal contingency action or contingency plan (where the specific contingency action is identified at the current time) is not included in the remedy for OU3. This allows the additional action, if necessary, to be tailored

to the specific problem that needs to be addressed at such a time it is required. Typically, long-term monitoring programs identify decision points so that additional action is taken before there is an adverse impact to human health or the environment.

Comment 3: Why does Alternative 5 disqualify as a source control remedy, but Alternative 1 (no action), which is not a source control remedy, is included in the PRAP?

Response: As provided in the Summary of Remedial Alternatives in the PRAP, Alternative 1 (No Action) is presented as a baseline for comparison with other remedial action alternatives as required by regulation. Therefore, regardless of whether the No Action Alternative meets the remedial action objectives, it must be included in the FS and in the PRAP for comparison to existing conditions. With the exception of the No Action Alternative, only alternatives that meet the remedial action objectives are considered for selection for a remedial action. Five remedial action objectives were originally identified for the JILF; four relate to source control and the fifth relates to both source control and management of migration. When the JILF was separated into two operable units, OU3 (source control) and OU6 (management of migration), the fifth remedial action objective no longer applied to source control for OU3. Based on additional evaluation by the Navy after receiving comments on the draft PRAP, the cut-off barrier included in Alternative 5 was considered only to meet this fifth remedial action objective related to management of migration and was removed from the draft final PRAP for OU3.

Comment 4: Alternative 5, included in the draft PRAP, should not have been deleted from the final PRAP. Deleting important information at the 11th hour is not the way to gain public trust.

Response: In hindsight, the Navy recognizes the PRAP would have been easier to explain and understand if Alternative 5 had been removed from the draft PRAP before it was presented to the RAB. Navy personnel hoped that in their explanation of the separation of the Operable Units that the RAB, and subsequently the public, would understand that Alternative 5 (included in the FS for OU3), no longer applied to the OU3 remedy which addresses source control only. Based on later feedback from RAB members and other members of the community, the Navy did not do an adequate job of explaining this during the November 2000 RAB meeting. In the time between the RAB meeting and the public comment period on the PRAP, the Navy deleted Alternative 5 from the draft final PRAP in response to comments received from the USEPA. In response to the many comments on the PRAP and questions by RAB members, the Navy provided an additional presentation on the OU3 PRAP and the separation of the Operable Units during the March 15, 2001 RAB meeting in an effort to more clearly explain why Alternative 5 was removed from the PRAP. In addition, the Navy prepared a fact sheet to explain the current understanding of risks for OU3 and OU6 and the separation of operable units. This fact sheet was mailed to the people included on the PNS IRP mailing list. The Navy hopes that the additional

information helped address questions among RAB members and concerned members of the public and better explained the reasons for the separation of the Operable Units and the removal of Alternative 5 from the PRAP.

Comment 5: Complete excavation of the landfill with restoration to pristine conditions is necessary to protect human health and the environment.

Response: Complete excavation of the landfill was evaluated in the FS (Alternative G) during the screening of alternatives. This alternative was screened out in the FS because there were concerns with the effectiveness, implementability, and cost of the alternative. Specifically some of the concerns are that a large volume of material (approximately 700,000 cubic yards) would need to be excavated and transported off site for treatment and disposal. Assuming off site areas (off the Shipyard) were available for disposal of the excavated materials, the excavation was estimated to take approximately 16 years and costs estimated to be greater than a billion dollars. During excavation of materials, considerable planning and engineering controls would be required to ensure that the environment and worker health and safety would not be adversely impacted. The other alternatives developed could provide protection of human health and the environment and meet regulations for the site/activity with less concerns during construction and more cost-effectively, therefore, the alternative was considered one of the least feasible options and was eliminated from further consideration in the FS.

Comment 6: Alternative 1 is the best choice.

Response: Alternative 1 (No Action) would not meet the remedial action objectives (e.g., prevent human exposure to soil/waste materials or groundwater) and therefore does not provide adequate overall protection of human health and the environment. Therefore, the Navy is not selecting Alternative 1 for the JILF. Evaluation of a No Action alternative is required by regulation even when No Action will not meet the remedial action objectives.

Comment 7: There is no clear monitoring plan in any of the alternatives or cost estimates for the alternatives. Under Alternative 1 (no action), the Navy will still need to monitor; however there are no cost estimates for Alternative 1. Therefore, it is unlikely that the cost estimates for the alternatives presented in the PRAP are adequate.

Response: Alternative 1 (No Action) does not include monitoring or any other action (including institutional controls or five-year review); therefore there is not cost associated with this alternative. All other alternatives considered for the JILF include a monitoring component and therefore, the cost

estimates include costs for monitoring. The specifics of the monitoring plan will be determined using the DQO process after the ROD is signed.

Comment 8: The remedial alternatives evaluated by the Navy are incomplete and there are a lack of adequate options. Alternative 5 was removed from consideration and there is no consideration of complete or partial removal.

Response: As part of an FS, technologies to address site contaminants and conditions are identified and alternatives are developed to meet the remedial action objectives. The alternatives then may be screened to identify the most feasible alternatives for further evaluation. For a landfill such as the JILF, the most typical remedy (the presumptive remedy) is capping. However, during the identification and screening of alternatives, a range of alternatives were developed that could meet the remedial action objectives (RAOs). The more feasible alternatives were retained for further evaluation. Complete excavation and partial removal of the landfill alternatives were developed in the FS and then eliminated during the screening of alternative stage because it was considered one of the least feasible options for the JILF. A cap with a cut-off barrier (Alternative 5) was retained for further evaluation. During preparation of the FS, MEDEP raised some concerns related to the seeps that would require additional investigation to address and the agencies decided that “source-control” and “management of migration” needed to be separated (see additional discussion under the Comments on Separation of Operable Units and Monitoring of Seeps). The cut-off barrier (included in Alternative 5) was considered only to address “management of migration” and was not related to the “source control” remedy. Therefore, for a “source control” remedy under OU3, a cut-off barrier (Alternative 5) was removed from consideration at this time. If at any time during the evaluation of the effectiveness of the remedy for OU3, the evaluation of the interim remedy for OU4, or during the evaluation of the additional information for OU6, if is determined that additional action is necessary to address migration of groundwater/seeps from the JILF to the offshore, then the Navy will take action, and a barrier would likely be one of several alternatives considered at that time.

The Navy has agreed to re-evaluate the feasibility of consolidating portions of the landfill (in the Jamaica Cove area and the vicinity of the former location of Mercury Burial Site II) into the existing landfill. The evaluation will be conducted as part of the pre-design investigation and cap design and addresses issues related to both OU3 and OU6.

Comment 9: Alternatives 1 and 2 are do nothing choices and the State of Maine would not agree to such choices so they do not represent genuine options. Alternatives 3 and 4 are merely variations on the same theme and those technical variations could have been left to the design phase.

Response: Alternative 1 (no action) must be evaluated in accordance with CERCLA regulations. Alternative 2 was evaluated as a limited action alternative and it meets the CERCLA requirements. Alternatives 3 and 4 are similar and are variations on cap components that would meet the same required regulations, but vary on how they consider State of Maine Solid Waste Regulations (which will be considered during the design where appropriate). The major difference between Alternatives 3 and 4 is the method in which the cover minimizes water (such as from rainfall or snow) from infiltrating and coming in contact with underlying landfill materials. Both alternatives include a drainage layer with an underlying barrier layer above the landfill materials to minimize the infiltration. The drainage layer in Alternative 3 would help the water drain faster away from landfill to minimize water coming in contact with barrier layer and underlying landfill materials. Specifically the cover in Alternative 3 features an “enhanced drainage layer with a high-flow capacity” that provides better drainage than a standard drainage layer (such as that included in Alternative 4). The barrier layer in Alternative 4 would be designed to be better at preventing water from going through the layer to the underlying landfill material than a standard barrier layer (such as included in Alternative 3). Evaluation of the ability of the two covers to minimize water from permeating through the cover to underlying landfill material indicates that the two are equally effective (both would prevent over 99 percent of rainfall/snow from going through the cover to the underlying landfill materials). However, availability of materials for the cover layers, the constructability, and costs are likely to be better for Alternative 3 than for Alternative 4 (particularly based on the ability to use on-site materials as part of the cover design for Alternative 3).

Comment 10: The USEPA has so far gone along with the Navy’s proposals for the JILF. They now stand alone as the only signatory on this decision in a position to call for a real remedial action plan. There is still time for the USEPA to come forth to protect human health and the environment by demanding the Navy place a barrier as well as a cap at the JILF.

Response: One of the threshold criteria for selection of a remedy is protection of human health and the environment. This means that no remedy can be selected unless it meets this CERCLA criterion. EPA believes that the source control remedy outlined in the draft ROD is protective of human health and the environment. In addition, based on available information, the migration of groundwater offshore from the JILF does not represent a current or potential future risk that requires a cut-off barrier. This finding will be re-evaluated in relation to the OU6 studies and decision-making process.

Comment 11: Will the shoreline erosion controls (rip-rap and/or wetlands) be as effective as a barrier to stop any kind of leakage?

Response: The purpose of the shoreline erosion controls is to prevent the wearing away of soil/fill material along the shoreline from tidal action of the surface water. While the shoreline erosion controls

may reduce some of the tidal infiltration, it is not a barrier/containment system that will minimize groundwater from migrating offsite.

Comments on Separation of Operable Units and Monitoring of Seeps

Comment 12: Why was a last-minute decision made to separate OU3 and OU6?

Response: The separation was made so that the remedy for soil and groundwater within the boundary of the JILF would not be further delayed while addressing MEDEP's concerns related to the seeps. The Navy, USEPA, and MEDEP are all in agreement that a cap is needed to reduce human health risks from exposure to the site soils and groundwater. The three agencies decided that "source control" and "management of migration" needed to be separated because the seeps do not pose an immediate threat to human health and the environment, the agencies want to take action on installation of the cap as soon as possible, and separating OU3 and OU6 would provide the additional time needed to properly address concerns that MEDEP has about the seeps without delaying installation of the needed landfill cap. The following provides a discussion of the rationale and timeframe related to the separation:

During development of the OU3 Feasibility Study, the MEDEP identified a concern with the seeps found on the OU3 shoreline. MEDEP has determined additional information is required to determine whether the water coming from the seeps that could have chemical concentrations exceeding surface water quality criteria may adversely impact the organisms exposed directly to the seeps. In September 2000, a technical meeting was held to resolve the MEDEP's seep issues. Although the Navy and USEPA indicated that the concern could be addressed as part of a comprehensive remedy for OU3, the MEDEP indicated that more information is needed before they could identify a remedy for seeps/management of migration. To address the MEDEP's concern without further delay of a remedy for the soils and groundwater within the boundary of the landfill, the Navy split off seeps/management of migration from OU3 and created a new operable unit, OU6. The decision was made during the October 23, 2000 conference call that was held between the Navy, USEPA, and MEDEP. The USEPA issued a letter (dated October 24, 2000) documenting the outcome of the conference call, wherein all the parties agreed to pursue only a source control remedy for OU3 at this time. The Navy prepared a clarification memorandum (dated November 21, 2000) to accompany the OU3 FS that explains the separation of OU3 and OU6 and clarifies that the OU3 FS was finalized without addressing the separation of operable units. The Navy also discussed the separation of OU3 and OU6 at the November 30, 2000 RAB meeting.

Comment 13: The Navy should not separate "source control" from "management of migration" for the JILF when the impacts to the offshore and nearshore environment via seeps from the JILF are not clearly

understood. The remedies for OU3 and OU6 should occur concurrently and should include monitoring of seeps and thorough evaluation of containment methods to control groundwater migration from the JILF.

Response: Various investigations have been conducted related to the chemicals at the JILF and the potential for future impact on the offshore. The results of these investigations indicate that the JILF has a low potential to impact the offshore in the future. The Navy believes that the interim monitoring program that was developed to address the offshore and nearshore areas (OU4) that is currently being conducted will provide additional understanding to the current and potential future impacts. MEDEP agrees that they are ready to identify a remedy for source control, but they do not believe that they have enough information to identify an appropriate remedy for management of migration at this time. MEDEP raised a question during development of the OU3 FS about the impacts the seeps were having directly on the plant and animal life living in the seeps. Addressing MEDEP's concerns will take additional time that would delay the construction of the source control remedy, a landfill cap. All three agencies are in agreement that the cap is needed at this time to reduce human health risks from exposure to the site soils and groundwater, and that containment is not required based on the information currently available. The three agencies decided that "source control" and "management of migration" needed to be separated because the seeps do not pose an immediate threat to human health and the environment, the agencies want to take action on installation of the cap as soon as possible, and separating OU3 and OU6 would provide the additional time needed to properly address the MEDEP's concerns about seeps without delaying installation of the landfill cap.

The Navy's original timeline indicated they would begin investigation of the seeps under OU6 after construction of the landfill cap was complete and the soil and groundwater had sufficient time to settle. Based on comments received from the MEDEP on the schedule for OU6 and the concerns raised by the public during the comment period on the PRAP for OU3, the Navy, in consultation with the USEPA and MEDEP, has agreed to take action on OU6 sooner by incorporating the following activities related to OU6 into the ROD for OU3:

- Initiate development of a work plan for the additional investigation for OU6 by holding a DQO meeting within 60 days of signing of the ROD for OU3.
- Complete the work plan for the additional investigation for OU6 by the time the JILF cap construction is complete.
- Evaluate the possibility of wetlands construction specifically for water quality improvement to address groundwater migration from the JILF.

The Navy plans to use the USEPA's DQO process for the development of the work plan. The DQO process is a logical process that assists with identifying the objectives of the work, the necessary sampling and testing requirements, and the evaluation and decisions that will be made once the data are collected. Through the DQO process a sampling plan for OU6 will be developed that includes information on where to collect samples, how many samples to collect, how and when to collect them, and what they will be tested for. The DQO meetings are held as technical meetings and the results of the meeting will be documented in the meeting minutes. The first DQO meeting for OU6 will be held within 60 days of the signing of the ROD for OU3. The final output from the DQO process is the work plan. The draft, draft final, and final versions of the work plan for OU6 will be provided to the regulators and RAB for review and comment. The final work plan will be complete and ready to use when the JILF cap is complete. The work plan and meeting minutes will be included in the PNS Information Repositories, which are available to the public in the Kittery Town Hall and the Portsmouth Library.

In addition to the items specifically associated with OU6, the Navy has agreed to re-evaluate the feasibility of consolidating portions of the landfill (in the Jamaica Cove area and the vicinity of the former location of Mercury Burial Site II) into the existing landfill. The evaluation will be conducted as part of the pre-design investigation and cap design and addresses issues related to both OU3 and OU6.

Comment 14: What is the timeline for study and remediation of OU6 and what funding will be available to deal with OU6?

Response: The Navy has agreed to hold a DQO meeting for OU6 within 60 days of signature of the OU3 ROD and to finalize the work plan for the OU6 sampling by the time the cap construction at the JILF is complete. The work plan will include a schedule for the fieldwork, report and subsequent steps in the CERCLA process. A proposed schedule for the work plan for OU6 will be provided in the Amended Site Management Plan for Fiscal Year 2002 (the draft is scheduled to be submitted by June 15, 2001). Prioritization of studies for OU6, and other areas covered by PNS' IRP is performed in accordance with the Federal Facilities Agreement (FFA) for PNS, the Department of defense (DOD)'s Relative Risk Evaluation Framework, availability of funds, and input from the RAB members (USEPA, MEDEP, community members, and natural resource trustees).

Comment 15: How does the new OU6 relate to OU3 and OU4. How will the OU3 remedy currently proposed by the Navy affect OU6?

Response: OU3 addresses the source materials (soil, landfill debris, and groundwater) contained within the boundaries of the JILF. OU4 includes the offshore areas of PNS. OU6 has been identified to address migration of groundwater from OU3 to OU4 via the seeps in the intertidal area of the JILF shoreline.

Although OU4 includes the intertidal area of the JILF shoreline, OU4 focuses on the sediment in the offshore area (both intertidal and subtidal). The interim offshore monitoring program for OU4 can be used to determine the potential impact of the OU6 groundwater migration/seeps on the sediment (and biota). If a potential impact to the offshore is found that relates to OU6 groundwater migration/seeps, then action to stop/control the migration would be evaluated and conducted as necessary as part of OU6.

Because the remedy for OU3 includes shoreline erosion controls in the intertidal area, the seeps may no longer be present in the intertidal area after construction of the cap is complete. Therefore, the MEDEP's concern related to organisms exposed directly to the seeps may no longer be an issue. However, as discussed in the response to Comment 13, the Navy will prepare a work plan for investigation of OU6 (using the DQO process). The Navy will conduct the investigation in accordance with the work plan. Based on the information obtained during the investigation, risks related to groundwater migration will be calculated and a feasibility study will be conducted. If necessary, a remedy to address risks related to the seeps will be identified. The remedy could indicate that additional monitoring specifically for OU6 is needed, that OU3 and OU4 monitoring are sufficient for OU6, or that active measures for management of migration (e.g., barrier wall or groundwater collection) are necessary.

Comments Related to Human Health and Environmental Risk Concerns

Comment 16: Without containment at the JILF, daily tidal action and the current groundwater seepage will continue to flush contaminants from the JILF and introduce them into the intertidal nearshore and offshore environments. These represent continued risk to human health and the environment.

Response: When evaluating whether a site represents a health or environmental concern, the type of chemical and the chemical concentrations must be considered. The presence of a chemical at detectable levels does not necessarily indicate a health/environmental concern. Chemicals were detected in the seeps and sediments along the shore of the JILF at low concentrations in comparison to human health risk standards [the risks identified were within or below the CERCLA risk range (between 10^{-6} and 10^{-4}) and below the MEDEP risk guidelines (1×10^{-5})]. Risk evaluations indicated that there are no human health concerns for people (or children) who may play along the shoreline of the JILF because of chemicals in the seep or sediment (see the Feasibility Study Report for Operable Unit 3, TtNUS, May 2000a for more details). The chemical concentrations in the sediment and surface water in the vicinity of the Shipyard are also low in comparison to human health risk standards and there are no human health concerns because of chemicals in the sediment or surface water. Explaining the human health concerns related to seafood ingestion is a little more complicated. There are a variety of chemical and biological sources present in the lower Piscataqua River. There are shellfish closures or restrictions in the lower Piscataqua River currently imposed by the States of Maine and New Hampshire because of

biological contamination primarily from sewage treatment plants and from private septic systems in previous years. In addition, there are seafood consumption advisories in place by the States of Maine and New Hampshire. The risk evaluation for seafood consumption indicated that the concentrations of chemicals in the vicinity of Shipyard were similar to elsewhere in the lower Piscataqua River. However, as part of the interim offshore monitoring program development, the Navy is collecting sediment, mussel, and juvenile lobster data (see the Interim ROD for OU4, Navy 1999 and Interim Offshore Monitoring Plan for OU4, TtNUS, October 1999 for more details).

Comment 17: Will the delay for addressing management of migration (OU6) result in risks to human health and the environment? What are the risks to human health from the seeps?

Response: The Navy does not believe that the delay for OU6 will result in unacceptable risks to human health and the environment. The risk evaluation for the seeps indicate that there are no human health concerns for exposure to the seeps. The offshore ecological concerns are being addressed as part of OU4 and the interim remedy for OU4 is currently being implemented. The MEDEP's specific concern related to seeps involves a small portion of the intertidal area, namely the organisms that live in the seeps. These concerns are localized; however, the Navy believes that appropriate data are currently being collected as part of OU4 that will be able to identify potential risks to the environment from the seeps. The investigation for OU6 will provide the data/information necessary to address the concerns related to seep. The objectives of the investigation will be determined as part of the DQO development for OU6.

Comment 18: The Navy needs to implement a testing protocol for the seeps from the landfill as well as intertidal monitoring to insure that at a minimum the public can be notified if there is any danger of contamination through eating fish or shell fish from the waters around the JILF.

Response: The Maine and New Hampshire Departments of Health are responsible for informing the public of restrictions on eating fish or shell fish in the waters of the respective States. The States of Maine and New Hampshire have advisories for seafood and fish consumption because of contamination in the Piscataqua River from other sources. The State of Maine determined no additional advisories are required for any chemicals specifically associated with the JILF. The Navy is conducting interim monitoring, which includes monitoring in the intertidal area of the JILF, in accordance with the Interim Record of Decision for OU4 (Navy, May 1999) and the Interim Offshore Monitoring Plan for OU4 (TtNUS, October 1999). The monitoring includes collection and testing of sediment, mussel, and juvenile lobster. Three rounds of monitoring have been completed and the fourth round will begin in the beginning of May 2001. The data will be evaluated to determine whether the PNS onshore sites are potentially adversely impacting the offshore (currently or in the near future). In addition, the Navy has provided and

will continue to provide the appropriate agencies of the States of Maine and New Hampshire with data from the various offshore investigations, including the interim offshore monitoring, so that the States have the available data for the offshore of PNS.

Comment 19: What impact will dioxin concentrations detected in the soil at the JILF and in the sediment, mussel, and juvenile lobster near the JILF have on the results of the risk assessments? Dioxin testing of the seeps wasn't conducted; therefore, there is not sufficient information to determine whether dioxins are leaching out of the landfill. Finding dioxin in the seeps could alter the risk level of the site significantly. Also, evaluation of the available dioxin data may change the risk assessment conclusions significantly.

Response: In terms of risks related to soil and groundwater within the JILF boundary, dioxin concentrations detected in soil during the February/March 2000 test pitting does not impact the understanding or results of the risk evaluation. As part of the Revised OU3 Risk Assessment (TtNUS, May, 2000a), risks were identified within the CERCLA risk range (between 1×10^{-6} and 1×10^{-4}) and above MEDEP's risk guidelines (1×10^{-5}). Based on the risks identified, the Navy evaluated alternatives in feasibility study and proposed a landfill cap. Performing a new risk assessment, which includes dioxins, on the soil and groundwater within the JILF will not cause the Navy to select a different source control remedy because the remedy will address all chemicals detected within the landfill (including dioxin) by putting a physical barrier to prevent contact with soil and using institutional controls to restrict land use and use of fresh groundwater for drinking. The Navy will use the DQO process to determine components for the OU3 monitoring program including monitoring media (e.g., groundwater), analytes (e.g., inorganic and organic chemicals), and decisions (e.g., the need for additional action) (please see the response to Comment 2 for additional information regarding DQOs).

The Navy will also be developing a work plan to address MEDEP's concerns regarding the seeps using USEPA's DQO process (to be used for the development of the investigation program for OU6, management of migration from the JILF as discussed in the response to Comment 13). Following the seep investigation, the risks associated with the seeps will be evaluated and appropriate action to address the risks will be determined.

The Navy believes that risks to human health and the environment from chemicals present in OU3 and OU6 media (including dioxins), will be addressed as necessary by the remedy for OU3 (through covering of site material, institutional controls, and monitoring) and the investigation program for OU6 (through development and implementation of the investigation program) to ensure that human health and the environment are not adversely impacted from the JILF.

Comment 20: A strong potential exists for future releases from undiscovered steel drums in the JILF. Investigations to date were limited and did not prove that additional drums are not present elsewhere in the JILF.

Response: The JILF is a heterogeneous landfill, where a variety of materials were deposited between 1945 and 1978. Remedial investigations at the JILF, including the RFI, RFI Data Gap, Groundwater Monitoring, February/March 2000 test pitting, and test pitting related to the mercury burial sites were conducted to further identify the type, quantity, and location of wastes present in the JILF. As part of these investigations forty drums of non-hazardous materials were found (at one location) and removed from the landfill and one drum of non-hazardous material (resembling Portland cement) at another location was found and left in place. With exception of the mercury burial sites, no other drums of hazardous materials have been found during the various test pitting, soil sampling, or soil boring/monitoring well installation activities that have been conducted as part of the remedial investigations. In addition, the landfill has been characterized as containing a large quantity of low level wastes. This means that the USEPA, MEDEP, and the Navy all believe that the JILF does not contain hazardous wastes that are at high concentrations (i.e., hot spots) or that are likely to move in to the groundwater. The characterization of the landfill is based on the various investigations conducted at the JILF, including surveys, test pitting, soil sampling, and groundwater monitoring. The concrete vaults at the mercury burial sites, which encapsulated the mercury contaminated materials (liquids and solids) in drums, were excavated and disposed off site. The concrete vaults were intact and there was no indication of any leakage from the vaults. Therefore, the Navy believes that there is a low potential for the presence of drums of hazardous materials in the landfill and that any potential future releases can be appropriately addressed in a monitoring program as part of the remedy for OU3.

Comment 21: Most of the quantitative analysis to date has focused solely on the human health risk at the immediate landfill site. However, there has been little data generated related to the overall health of the ecosystem or whether it will ever be safe to fish and swim in the Piscataqua River.

Response: Evaluation of human health and ecological risks in the offshore area have been conducted. The risk assessments focus on the risks associated with PNS IRP sites. The Navy cannot use remedial funds to investigate the overall health of the Piscataqua River. Based on the risk assessments conducted by the Navy, the offshore area of PNS is considered safe for human exposure. However, the States of Maine and New Hampshire have issued seafood advisories in place because of contamination from all sources in the Piscataqua River estuary. Please also see the response to Comment 18 related to recent OU4 monitoring and provision of data to the States of Maine and New Hampshire.

Comment 22: The sediment in the offshore area of the Shipyard is heavily contaminated with lead and other toxins and there should be no additional contamination from the seeps added to what is already there.

Response: The ecological risk assessment for the offshore indicated low risks in the offshore areas in the vicinity of OU3 and OU3 seeps (i.e., Jamaica Cove and Clark Cove). The Navy is conducting interim offshore monitoring that included consideration of seep impacts to sediment. The data will be evaluated (in accordance with the interim offshore monitoring plan) to determine whether there is a potential impact to the sediment from the PNS onshore sites.

Comment 23: Contaminants present in Sullivan Point have been shown to pose a significantly higher risk to human health and safety and the Navy has not been able to rule out that some of the contamination may come from the landfill. There exists the possibility that fractures in bedrock allow the JILF groundwater to migrate in the direction of Sullivan Point.

Response: The offshore risk assessments, which included Sullivan Point, did not show unacceptable risks to human health at Sullivan Point. The concern that the JILF is currently impacting Sullivan Point was raised previously by the MEDEP and SAPL (on the draft version of the Seep/Sediment Summary Report, TtNUS, August, 2000). Investigations conducted in November 1995 and in August 1999 indicate that the groundwater from OU3 flows toward Clark Cove and not toward Sullivan Point.

Comments on the CERCLA Process

Comment 24: How will the public's concerns related to the remedy for OU3 be addressed under the CERCLA process?

Response: Many of the concerns related to human health and the environment associated with the seeps and offshore have been expressed previously by RAB members and discussed by the Navy at RAB meetings and through response to comments on the various documents related to the development of the PRAP. The Navy has been aware that several members of the RAB seemed to have a preference for a cut-off barrier or containment system to address groundwater migration. However, based on the information available at this time, the risks for the site do not support the need for containment of groundwater at this time. Because waste is left in place a long-term monitoring program is required to ensure that the selected remedy is effective in the future and to verify the remedy remains protective of human health and the environment. The concerns raised related to the separation of OU3 and OU6 and the timeframe for addressing OU6 are being addressed by incorporating several requirements into the ROD for OU3. In addition, the Navy already has a monitoring program in place that was designed to

determine whether there are potential continued adverse impacts to the offshore area, which includes the intertidal and subtidal areas. The presence of seeps in the intertidal area was considered during the program development. It was determined that monitoring of sediment in the vicinity of the seep was a better indicator of adverse impacts because contaminants tend to accumulate in the sediment. The program was developed through the DQO process and the USEPA, MEDEP, NCAA, US Fish and Wildlife, and SAPL's TAG consultant participated with the Navy in the development of the process. The Navy believes that the appropriate technical people from the various regulatory agencies and the Navy participated in the development of the monitoring program to ensure that a comprehensive monitoring program was developed for the offshore areas.

Comment 25: The cleanup process is too slow and needs to be accelerated. Why has it taken the Navy so long to come up with the solution for capping and how many more years will it take to determine a need for a barrier?

Response: The Navy began a feasibility study in 1995 that included the sites within OU3. At that time, data gaps were identified that required the Navy to conduct additional investigations before identifying a remedy for the sites within OU3. The Navy conducted four rounds of groundwater, seep, and sediment monitoring; and conducted onshore/offshore contaminant fate and transport modeling. In addition, the Navy updated the human health risk assessment for OU3. The results of the additional investigations support the Navy's evaluation that human health risks estimates are above acceptable levels for exposure to JILF soil and fresh groundwater. To address these risks the Navy is selecting a cap for the OU3. The investigations also support the Navy's conclusion that a barrier is not needed at this time. Because waste is left in place a long-term monitoring program is required to ensure that the selected remedy is effective in the future and to verify the remedy remains protective of human health and the environment. If site conditions change such that additional action is required to protect human health and the environment, the Navy will conduct the appropriate action.

Comment 26: The community's voice is not being adequately heard in the CERCLA process. Clear answers to questions were not provided at the Informational Open House on February 1, 2001. Also, the communication with the public should use less technical terms and provide less technical discussion so that the general public can understand.

Response: Through the RAB the Navy tries to obtain community input throughout the CERCLA process. The Navy solicits input from the RAB through RAB presentations, discussions at the RAB, and RAB minutes and updates. In addition, RAB members are provided with documents to review and they can provide comments to the Navy, USEPA, or MEDEP. RAB updates are mailed to the PNS IRP mailing list. However, to encourage the community to provide their concerns to the Navy at the earliest opportunity,

the Navy will attempt to provide fact sheets on a more regular basis. The fact sheets will provide in less technical terms information related to current activities or concerns for the CERCLA sites at PNS.

Comment 27: Concern that the representatives for the Navy, USEPA, and MEDEP at the public hearing are not the decision makers.

Response: The representatives of the Navy, USEPA, and MEDEP who attended the public hearing on February 22, 2001 are the personnel responsible for providing recommendations and updates to the people who will be signing the ROD, and are also the most knowledgeable in the day to day management of PNS's IRP sites.

Comment 28: Why was there no New Hampshire Environmental Protection representative involved in the remediation process when the Shipyard is so close to the boundary of New Hampshire and Maine and could impact New Hampshire waters?

Response: The Navy is strictly neutral in the current dispute between the States of New Hampshire and Maine concerning the physical location of the PNS. However, the Shipyard historically has been regarded by the State of Maine and the DOD and the Navy as being physically located within the boundaries of the State of Maine. Accordingly, the Shipyard is subject to regulation by the State of Maine and not by the State of New Hampshire. The issue of the Shipyard's location was recently before the United States Supreme Court and the Supreme Court ruled that the Shipyard is in the State of Maine. However, we wish to point out that the New Hampshire Fish and Game Department has a seat on the RAB as a Natural Resource trustee and receives all information related to the Shipyard's IRP clean up activities.

Comment 29: How do funding problems affect adequate implementation of additional remedial action based on the results of monitoring?

Response: At this time, funding has not been a factor affecting adequate implementation of remedial actions based on the results of monitoring. The goal of the monitoring plan is identify potential adverse impacts to human health and the environment to permit timely evaluation of additional remedial actions prior to implementation. However, should an immediate action be required, the Navy will work with USEPA and the states to prioritize work based on risk using the DOD's Relative Risk Evaluation Framework (DOD, Summer 1997) to address the high risk sites first.

Comment 30: Are funding and cost driving selection of remedy? How do budget cycles affect remedy selection?

Response: Remedy selection is based on CERCLA's nine criteria that are used to evaluate the alternatives and compare them to one another in the FS. The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. A description of the purposes of the three groups follows:

- Threshold criteria
 - The threshold criteria are (1) overall protection of human health and the environment, and (2) compliance with applicable or relevant and appropriate requirements (ARARS) (or justification of a waiver)
 - Threshold criteria are requirements that each alternative must meet to be eligible for selection.
- Primary balancing criteria
 - The primary balancing criteria are: (1) long-term effectiveness and permanence; (2) reduction of toxicity, mobility, or volume through treatment; (3) short-term effectiveness; (4) implementability; and (5) cost;
 - The primary balancing criteria are used to weigh major trade-offs among alternatives.
- Modifying criteria
 - The modifying criteria are: (1) state acceptance, and (2) community acceptance;
 - The modifying criteria may be considered to the extent that information is available during the FS, but can be fully considered only after public comment is received on the Proposed Plan.

In the final balancing of trade-offs between alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria. Availability of funds is not one of CERCLA's nine criteria. Cost is one of the, five primary balancing criteria that are considered of equal importance with the two modifying criteria after public comment period in selection of a remedy. Therefore budget funding and budget cycles are not considered during the remedy selection process.

Additional Comments

Comment 31: The RAB has not met since November 30, 2000, as a result a vital link in communications between the community and the shipyard was missing while some crucial decisions were being made about the JILF.

Response: The Navy discussed the RAB meeting schedule at the November 30, 2000 RAB and proposed to hold the next RAB meeting in March 2001 because of the number of meetings to be held related to the OU3 PRAP (the informational open house and public hearing), the Navy. No objections were received and the next RAB meeting was subsequently scheduled for March 2001. In addition, RAB members are encouraged to contact the Navy, USEPA, or MEDEP to indicate their concerns or concerns of the community at any time. The Navy recognizes that not all RAB members can attend the RAB meetings. At future RAB meetings and in the minutes or RAB updates from the meetings, the Navy will continue to encourage the RAB members to provide their input either through discussion at the RAB meeting or by calling or writing to the Navy, MEDEP, or USEPA; and by inviting RAB members to participate in technical meetings.

Comment 32: As part of the licensing process for a commercial hazardous waste storage facility at the Shipyard the Navy indicated that it had a schedule in place to clean up the superfund sites that currently exist. However, it appears that the Navy is now delaying cleanup for years and that no schedule is in place to determine when the clean up is going to be conducted. Therefore, the Navy should withdraw its application for a commercial hazardous waste storage facility license.

Response: Schedules from the February 2001 Amended Site Management Plan for clean up of the IRP sites at the Shipyard have been submitted as part of the license application for the commercial facility permit. The schedule for OU6 will be updated in Amended Site Management Plan for Fiscal Year 2002 (the draft is scheduled to be submitted by June 15, 2001) to reflect the schedule changes based on the addition of investigations for OU6, which will be incorporated in the ROD for OU3.

REFERENCES

REFERENCES

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APPENDICES

APPENDIX A

MEDEP LETTER OF CONCURRENCE AND ADMINISTRATIVE RECORD INDEX FOR OU3

APPENDIX A.1
MEDEP LETTER OF CONCURRENCE



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

MARTHA KIRKPATRICK
COMMISSIONER

July 26, 2001

V. T. Williams
Captain, USN
Commander,
Portsmouth Naval Shipyard
Kittery, Maine

Re: Letter of Concurrence, Record of Decision for Operable Unit 3, Portsmouth Naval Shipyard,
Kittery, Maine

Dear Capt. Williams:

The Maine Department of Environmental Protection (MEDEP) has reviewed the Draft Final Record of Decision (ROD) for Operable Unit 3, dated July 2001. Operable Unit 3 consists of the Jamaica Island Landfill (Site 8), the Former Mercury Burial Sites (Site 9) and the Former Waste Oil Tanks Nos. 6 and 7.

Based on MEDEP's review the Maine Department of Environmental Protection concurs with the selected remedial action which consists of a hazardous waste landfill cover, institutional controls, erosion controls, and monitoring. The remedial action is outlined below:

- A multiple layer cover over the landfill surface that would prevent receptors on the surface from coming in contact with contaminated soil and/or waste and minimize infiltration of water through the cover to the landfill.
- Institutional controls to restrict land and fresh water groundwater uses with the JILF boundary to prevent unacceptable human exposure to site contaminants. Institutional controls will also be used to prevent unrestricted disturbance of the hazardous waste landfill cover, shoreline erosion controls, and building and structures within the boundary of the JILF.
- Shoreline erosion controls, including rip-rap and/or wetlands placed along the shoreline, to minimize the potential for washing away of soil and/or waste materials from the edge of the JILF.
- Monitoring of site media to assess the effectiveness of the remedy over the long term.

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 940-4370 FAX: (207) 940-4384

PORTLAND
82 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

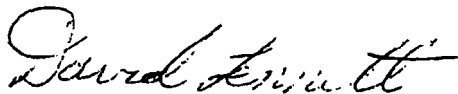
PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 764-1507

- Routine inspections and maintenance of the cover, shoreline erosion controls, and institutional controls to ensure that the cover, erosion controls, and site controls remain effective. An operation and maintenance plan will be developed.
- Five-year site reviews to confirm that remedial action objectives (RAOs) are being achieved and the remedy remains protective.

Please note that the State's concurrence with the remedial action is conditional on our acceptance of the landfill cover design. We anticipated that the Navy's landfill cover design will address all areas of the landfill including areas around buildings up to the footprints of the buildings.

The MEDEP looks forward to working with Navy and EPA to resolve the environmental problems posed by the Shipyard. If you need additional information do not hesitate to call me or members of my staff.

Sincerely,



David Lennett
Bureau Director
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection

pc:

Denise Messier, MEDEP
Larry Dearborn, MEDEP
Katie Zeeman, MEDEP
Harrison Bispham, MEDEP
Meghan Cassidy, USEPA
Marty Raymond, PNS
Linda Klink, TtNUS
Debbie Cohen, TtNUS
Ken Finkelstein, NOAA
Ken Munney, USFWS
Jeff Clifford, RAB
Doug Bogen, RAB

Don Card, RAB
Michele Dionne, RAB
Mary Marshall, RAB
Phil McCarthy, RAB
Jack McKenna, RAB
Onil Roy, RAB
Roger Wells, RAB
Seacoast Anti-Pollution League, TAG Group
Carolyn Lepage, TAG Advisor
Claire McBane, NH F&W
File

APPENDIX A.2

ADMINISTRATIVE RECORD INDEX

**ADMINISTRATIVE RECORD INDEX FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 2**

DATE	FILE SECTION	TYPE OF DOCUMENT	TITLE/SUBJECT	COMMENT
June-83	Report	Report	Initial Assessment Study (IAS) for Portsmouth Naval Shipyard, Kittery, Maine	Naval Energy and Environmental Support Activity (NEESA) 1: 032, Port Hueneme, CA, Roy F. Weston
June-86	Report	Report	Final Confirmation Study Report on Hazardous Waste Sites at Portsmouth Naval Shipyard, Kittery, Maine	Loureiro Engineering Associates (LEA)
March-89	Report	Report	HSWA Permit for Portsmouth Naval Shipyard	Permit under the Hazardous and Solid Waste Amendments of 1984, United States Environmental Protection Agency (USEPA)
July-92	Report	Report	Draft RCRA Facility Investigation (RFI) Report for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
August-92	Report	Report	On-shore Ecological Risk Assessment for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
June-93	Report	Report	Addendum to RCRA Facility Investigation Report for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-94	Report	Report	Public Health and Environmental Risk Evaluation Part A: Human Health Risk Assessment (PHERE)	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-94	Correspondence	Correspondence	Sampling Results at Site 22, Portsmouth Naval Shipyard, Kittery, Maine	Letter dated March 30, 1994 from N. Beardsley, MEDEP to Lt. Conroy, NFEC.
May-94	Report	Report	Final Human Health Risk Assessment Report for Offshore Media (HHRA)	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-95	Report	Report	On-shore Feasibility Study (FS) (Draft) for Portsmouth Naval Shipyard, Kittery, Maine	Halliburton NUS Corporation, Wayne, PA
November-95	Report	Report	RCRA Facility Investigation (RFI) Data Gap Report for Portsmouth Naval Shipyard, Kittery, Maine	Halliburton NUS Corporation, Wayne, PA
January-96	Correspondence	Letter Report	Alternative for Excavation of All Contaminated Material at the JILF and Consolidation above High Tide Level	Report dated January 16, 1996, prepared by United States Navy (Northern Division, Lester, PA).
March-96	Report	Response to Comments	Response to EPA and MEDEP Comments on the Draft On-Shore Feasibility Study Report	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
June-96	Report	Report	Phase II Ambient Air Quality and Meteorological Monitoring Report	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
October-96	Report	Report	Community Relation Plan for Portsmouth Naval Shipyard, Kittery, Maine	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
September-97	Report	Report	Action Memorandum for Mercury Burial Site I a Portsmouth Naval Shipyard, Kittery, Maine	Foster Wheeler Environmental Corporation (FWENC) Longhom, PA
February-98	Correspondence	Correspondence	Evaluation of Heavy Metal Migration at Portsmouth Naval Shipyard with Geochemical Modeling	Letter dated February 18, 1998 from I. McLeod, MEDEP to F. Evans, Navy.
May-99	Report	Report	Interim Record of Decision of OU4	United States Navy (Northern Division, Lester, PA)

APPENDIX B

COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

APPENDIX B.1
ORAL COMMENTS

ORIGINAL

THE STATE OF NEW HAMPSHIRE CITY OF PORTSMOUTH

* * * * *
In The Matter of: The Public *
Hearing for the Navy's Proposed *
Remedial Action Plan for the *
Jamaica Island Landfill *
* * * * *

TRANSCRIPT OF PROCEEDINGS

Date: Thursday, February 22, 2001
Place: Marriott Courtyard Hotel
Portsmouth, New Hampshire
Time: Commencing at 7:00 p.m.

B E F O R E: DEANNA J. DEAN, CSR, CRR
Certified Shorthand Reporter and
Notary Public of the State of New
Hampshire.

A L S O P R E S E N T:

FRED EVANS
Navy Remedial Project Manager

MEGHAN CASSIDY
EPA Remedial Project Manager

DENISE MESSIER
Maine Department of Environmental
Protection

MARTY RAYMOND
Shipyard Installation Restoration
Project Manager

KENNETH PLAISTED
Head of Portsmouth Naval Shipyard
Environmental Division and
Navy Co-Chair of Restoration Advisory
Board

AVICORE Reporting
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1 KENNETH PLAISTED: If I could have your
2 attention, please. Please take your seats and
3 we'll get started.

4 Okay. We'll get started.

5 Good evening and thank you for coming to
6 this public hearing for the Navy's proposed
7 remedial action plan for the Jamaica Island
8 Landfill. My name is Kenneth Plaisted and I am
9 head of the environmental division of the
10 Portsmouth Naval Shipyard. I am also the Navy
11 Cochair of the Shipyard's Restoration Advisory
12 Board.

13 As this is a public hearing, there is a
14 stenographer present who will be transcribing
15 tonight's proceedings.

16 This evening's agenda will be as
17 follows. I will explain the format for the
18 meeting first and introduce a few folks here at
19 the head table. Then Marty Raymond from the
20 shipyard's environmental division will give a
21 brief review of the Navy's preferred
22 alternative for the Jamaica Landfill. When
23 Marty is finished, I will open the meeting up

1 to the public for formal oral comments.

2 AN UNIDENTIFIED VOICE: Excuse me. I
3 have a question. How long do you think that
4 will take before you allow the public to speak?

5 MR. PLAISTED: Oh, I'm going to say
6 about 10 minutes --

7 AN UNIDENTIFIED VOICE: Okay. Thank
8 you.

9 MR. PLAISTED: -- probably, max.

10 On February 1st the Navy held an
11 informal open house, at which time we presented
12 the Navy's preferred alternative for the
13 cleanup of Jamaica Island. At that time the
14 Navy responded to comments and answered
15 questions. As indicated in the proposed plan,
16 tonight we are here to accept formal public
17 comments.

18 We will not be responding tonight. All
19 formal and written comments received during
20 this 30-day public comment period -- which ends
21 March 1st, by the way -- will be responded to
22 in the Responsiveness Summary of the record of
23 decision.

1 Tonight, if you choose to make a formal
2 oral comment, I ask that you come up here to
3 the microphone, so that the stenographer can
4 hear you, state your name, where you're from,
5 and if you're representing a group or an
6 organization, and if you'll be reading from a
7 written statement, to go slow so that the
8 stenographer can get it down.

9 Am I going too fast or too slow?

10 THE REPORTER: You're just right.

11 MR. PLAISTED: There you go.

12 I would like to introduce the people at
13 the head table. Fred Evans, who is the Navy's
14 remedial project manager from the Northern
15 Division in Philadelphia; Marty Raymond, who is
16 the IR program manager from the shipyard;
17 Denise messier from the Department of
18 Environmental Protection of the State of Maine;
19 and Meghan Cassidy, remedial project manager
20 for the EPA.

21 Okay. I'll turn it over to Marty, now.

22 MARTY RAYMOND: As Ken said, my name is
23 Marty Raymond and I work in the environmental

1 office at the shipyard. And I'm just going to
2 give a very quick review of the proposed
3 remedial action plan and where we are in the
4 CERCLA process.

5 At this stage in the CERCLA process, as
6 you can see, we've gone through the remedial
7 investigation and the feasibility study for the
8 Jamaica Island Landfill and we're at the
9 proposed plan. The next step will be the
10 record of decision, and I'll talk about that
11 quickly in a moment.

12 One of the important parts of the
13 proposed plan is community participation.
14 Again, Ken has already talked about this, but I
15 want to reiterate that we are accepting formal
16 comments on our proposed plan. The comment
17 period started January 31st and it closes March
18 1st.

19 There are several ways that you can give
20 comments to the Navy on our proposed plan. You
21 can do them in writing tonight. There are some
22 proposed plans on the back table, and on that
23 there's paper that you can submit formal

1 written comments; or you can send them in
2 writing by either mail or fax, and they have to
3 be postmarked no later than March 1st, to Alan
4 Robinson in our Public Affairs Office. And
5 Alan is sitting in the back. Or, as Ken
6 mentioned, we'll be accepting formal oral
7 comments after I'm done. And if you need any
8 additional information, this information is all
9 in the proposed plan or you can talk to Alan
10 Robinson in the Public Affairs Office.

11 The Navy's preliminary recommendation
12 for source control at OU3 -- and OU3 consists
13 of the Jamaica Island Landfill, which is Site
14 8; Site 9, which is the mercury burial vault
15 sites, and Site 11, which are some former waste
16 oil tanks. In the feasibility study, the
17 alternative that the Navy picked was
18 Alternative 3, and what that consists of is a
19 multi-layer hazardous waste cover which would
20 be put over the 25-acre landfill, and, again,
21 the specifics of that would be determined
22 during the design phase. We would also
23 implement -- the Navy would also implement

1 institutional controls for Operating Unit 3 of
2 the Jamaica Island Landfill. What that means
3 is, we would control it so there's no
4 residential development on the landfill and
5 that the groundwater is not used as a drinking
6 water source.

7 We would also propose to construct
8 shoreline erosion controls at the edge of the
9 landfill to prevent erosion of landfill
10 material into the river. The Navy has proposed
11 to do either riprap, which is rock, and/or some
12 form of constructive wetlands along the edge of
13 the landfill.

14 Also part of Alternative 3 is to conduct
15 long-term monitoring to determine the
16 effectiveness of the cover and erosion
17 controls, so we would be doing something such
18 as monitoring the groundwater in the landfill.
19 We'd also be conducting routine inspections and
20 maintenance of the cover, and erosion controls
21 to make sure that the remedy is still remaining
22 effective. And then we would also -- as I
23 mentioned, Operable Unit 3 consists of Site 8,

1 the landfill, Site 9, which is the mercury
2 burial vault site, and Site 11, the waste oil
3 tanks, and those would be addressed
4 concurrently with the remedy for the landfill.

5 Availability of documents for the
6 shipyard: the proposed plan, again, we have
7 copies here. All of the other documents that
8 are used to support our decision to pick
9 Alternative 3 as a preliminary recommendation
10 are at the information repositories. There are
11 two of them. One is at the Kittery Town Hall
12 and the other is at the Portsmouth Public
13 Library. Again, there are proposed plans there
14 as well as all the supporting documentation for
15 our decision.

16 That's it. I'm going to turn it back to
17 Ken.

18 MR. PLAISTED: Thank you, Marty.

19 I will now open the proceedings to the
20 public for you to come forward and submit your
21 formal oral comments.

22 So, if anyone would like to speak, just
23 raise your hand and come forward. Yes.

1 SUSAN JOHNSON: Hello. My name is Susan
2 Johnson and I live in Kittery. I was born in
3 Portsmouth, New Hampshire. I am a descendent
4 of the first people to settle this area. I am
5 very familiar with this area.

6 I give a proposal and a plea to this
7 board and to the U.S. Navy to shut down the
8 Portsmouth Naval Shipyard; to remove all traces
9 of it except for a couple of museums; to
10 convert it into a University of Maine or a
11 University of New Hampshire at Kittery; and to
12 remove not all -- only all the toxin, but every
13 trace of it. Complete removal of the landfill
14 and traces and waste at the yard, minus a
15 museum, should begin now out of respect of all
16 humankind.

17 Also, the people who have lived here and
18 who have suffered from the effects of the toxic
19 and the effects of the Navy yard should be
20 given payment for their exposure to the bad
21 elements from the yard all these years.

22 Thank you.

23 MR. PLAISTED: Thank you.

1 Yes, Kathy.

2 KATHY WOLF: My name is Kathy Wolf, and
3 my Kittery home, 10 Old Armory Way, is on the
4 back channel directly across from the
5 Portsmouth Naval Shipyard. I'm also a former
6 member of the Restoration Advisory Board.

7 I attended the information session
8 February 1 without a strong opinion on what
9 type of action was needed to deal with the
10 Jamaica Island Landfill and its 40 years of
11 toxic waste, and I left the meeting almost
12 three hours later with little information and a
13 tremendous amount of frustration. And I still
14 don't know if a barrier is needed or not.

15 None of us attending that meeting were
16 able to find out why the EPA and Navy chose not
17 to build a containment barrier on the water
18 side of the landfill, and this was despite
19 repeated questions that night. Does the
20 Navy -- do the Navy and EPA believe they have
21 enough information, monitoring studies, et
22 cetera, to guarantee that such a barrier is not
23 needed? Are they concerned that the technology

1 is not developed enough to assure that
2 installing such a barrier would cause more
3 problems than it would solve? Are they
4 positive that putting rocks and marsh plants
5 around the landfill will be as an -- as
6 effective as a barrier in stopping any kind of
7 leakage? Or does it just cost too much? Or is
8 it none of the above? We didn't receive clear
9 answers to any of those questions that night.

10 One question did have a clear answer.
11 The question was, to what degree is money
12 involved in the decision not to build a barrier
13 on the water side of the landfill? The answer,
14 unequivocally, and coming from several
15 authorities present in the room was, none at
16 all. Ironically, this one clear answer, I
17 discovered later, might really not have been
18 all that clear. It does seem that budget
19 cycles, at least according to the Maine
20 Department of Environmental Protection, did
21 play a factor, were a significant factor in
22 deciding to move ahead on the capping of the
23 landfill, and in order to do that, declaring

1 that the part that might possibly need a
2 barrier was really another site that may or may
3 not be dealt with in the future.

4 I really would like to hear answers to
5 these questions, and to other ones, such as,
6 what exactly are the plans and the timetable
7 for monitoring any discharge from the landfill
8 and from the nearby seeps that serve -- I guess
9 are adjacent on a point near the landfill.
10 What exactly is the timetable for deciding on
11 whether or not to build a barrier? This
12 question was asked more than once that night,
13 February 1st, at the information session, and
14 really, to the best of my memory, garnered only
15 vague responses, mentions of "Maybe in 2008"
16 and things like that.

17 If the Navy and the EPA and the state
18 want the public to be informed, I think these
19 questions need to be answered, and not just by
20 referring people to what I know firsthand are
21 kind of dense documents to get through at the
22 public libraries. Therefore, they need to be
23 answered directly, clearly, and factually.

1 And, therefore, I end my testimony with
2 two requests: Number one, that another
3 information session to explain in clear English
4 to a lay public and press be held, focusing
5 primarily on the barrier question, that it
6 start on time and that it focus on answering
7 and; questions two, that the State of Maine
8 Department of Environmental Protection withdraw
9 its support of capping the landfill until it
10 has received a clear, specific, satisfactory
11 time line and plan for dealing with the barrier
12 issue.

13 Thank you.

14 JAMES HARRIGAN: My name is James
15 Harrigan. I live in Portsmouth.

16 I'm actually approach the podium as a
17 proxy for Susan Emery of Five Mitchell School
18 Lane, Kittery Point, Maine. She wished to have
19 the following testimony read into the record.

20 "I favor a plan which includes not only
21 a camp but only a barrier around the landfill.
22 It is unacceptable to me to allow toxins to
23 leach out through the groundwater and daily

1 tidal migration for another five to 10 years,
2 as this represents continued great risk to the
3 health of the citizens in the area and the
4 estuary."

5 BRIAN STERN: My name is Brian Stern.
6 I'm an attorney. I live and work in Dover, New
7 Hampshire.

8 I know this is a point for public
9 comment and not to ask questions, but as a
10 point of information, I would like to know if
11 each of the members who are here from your
12 respective agencies are persons that would be
13 making the decision. I think that's important
14 to know. If not, I think there's a procedural
15 problem, since at any hearing the people who
16 are making the decision need to judge the
17 people who are speaking to assess their
18 credibility. I think that if you are not those
19 people, that there is then a lack of
20 credibility on behalf of the government holding
21 a public hearing, making decision of trying to
22 listen to the people that may not appear to be
23 giving the full weight or credit that the

1 public input deserves.

2 I don't know if you're willing to
3 address that or not, whether you are the
4 decision-makers that we're speaking to.

5 Apparently not.

6 MEGHAN CASSIDY: I'll speak for EPA. I
7 head the team that makes the recommendation.

8 MR. STERN: Thank you. I do
9 appreciate --

10 MS. CASSIDY: I'm the signatory.
11 It's -- I do not sign off on the agreement, but
12 I head the team that makes the recommendation.

13 MR. STERN: I do appreciate that as
14 well.

15 DENISE MESSIER: I'm speaking for the
16 State of Maine. I supervise the project
17 manager, so I'm part of the agency process that
18 makes the decision. I don't know how to answer
19 your question.

20 MR. STERN: Well, I'm not sure what that
21 answer means, but does anybody else care to
22 respond?

23 FRED EVANS: I'll answer for the Navy.

1 The three of us here from the Navy do
2 participate in making the recommendation.
3 Similar to Meghan, I head the team. Somebody
4 else signs the document, but I, you know, make
5 a recommendation to that person as to what I
6 feel should be done.

7 MR. STERN: Now, it would appear that
8 you are not the decision-maker for the Navy on
9 this issue. Is that correct?

10 MR. EVANS: I am not the person that is
11 permitted to sign the document.

12 MR. STERN: There is some history -- and
13 you're all relatively young, and I guess I am,
14 too. But the history of the United States is
15 that there's been a long history of travesties
16 perpetrated against its people, whether it's
17 incarcerations, and encampments, whether it's
18 poisons, whether it's testing on prisoners, and
19 the history is that the United States
20 government has always been slow in reparations
21 to its people for the ills that it's levied
22 against them.

23 The fact is that the history of the

1 United States is also that they've been very
2 slow to enforce their environmental laws. And
3 the fact is that it's also true that,
4 specifically in the area of hazardous waste,
5 the United States government has been slower
6 than commercial enterprises in cleaning up
7 hazardous waste sites and has fought their own
8 laws as strenuously as any other government.
9 And, in fact, in this case, this site goes back
10 to being on the cleanup list in 1989 and
11 receiving national priority list siting in
12 1994, and here we are in 2001, just looking at
13 the plans at this point. So that when the
14 United States government comes to its citizens
15 and says, "This is the best plan; this will
16 protect your health," there is a question of
17 credibility that leaves a great gap in that
18 credibility, that I think the citizens look to
19 be filled.

20 I ask that when you go back to your
21 private confines and you turn your back on this
22 room that you reconsider the plan that you have
23 here, and consider that there are poisons that

1 will be leaching into the environment, and put
2 yourself back in the shadow of that shoreline
3 and consider the fact that your proposed plan
4 would continue to allow that to exist.

5 I have certain information that I
6 reached my decision on, and we all have to
7 choose who we believe. The information that I
8 have comes from environmental groups, and when
9 I choose to look at decisions concerning the
10 environment, I choose to look at them and find
11 them to be credible. The facts that I
12 understand are that one-third of the water that
13 will come through that site is from rain and
14 snow and that the cap that is proposed will
15 address rain and snow, the surface water, and
16 it will not address tidal influence. My
17 understanding is that tidal influence
18 represents two-thirds of-the water flow, and
19 addressing the tidal influence would have a
20 bigger impact.

21 I also understand that the Navy has
22 separated operational units into what it is
23 calling groundwater, which would affect --

1 which would be a cap for rain and snow and then
2 a separate operational unit for the tidal
3 influence.

4 When you look at the government's
5 document on its glossary of technical terms, it
6 technically defines groundwater as a supply of
7 freshwater found beneath the earth's surface
8 that supplies wells and springs a supply of
9 freshwater. And that's how we may ordinarily
10 consider groundwater. Yet it goes on to say,
11 at Operational Unit 3, portions of the
12 groundwater are brackish, saline, because of
13 the intrusion of estuary water -- I'm sorry --
14 estaurine water.

15 So that you've created a fictitious --
16 two fictitious operational units saying that
17 they're separate entities; yet, by your own
18 definition, defined "groundwater" as brackish
19 and saline from the tidal influence, yet choose
20 not to address it or say that you're addressing
21 it by a cap, when in fact your own definition
22 says that you cannot be addressing it because
23 of the tidal influence.

1 This is a fictitious separation of
2 operational units and it's only addressing a
3 minor aspect of it. You're tailoring a remedy
4 to a budget as opposed to tailoring a budget to
5 a remedy. And, in fact, at the informational
6 session, you stated that cost is not a factor
7 in this, and I believe you should be bound to
8 that; otherwise, that has been misleading
9 information in the hearing process and the
10 decision you reached would be invalid.

11 If you have in fact said that cost is
12 not a factor, you should be bound by that and
13 you should fashion a remedy without concern for
14 cost. And if cost is a factor, then shame on
15 the government. The taxpayers are asking that
16 that site be cleaned up. And I say pay the
17 price; clean it up.

18 You're capable of doing it. The
19 government is capable of doing it. And it can
20 be done now under a single plan, faster than
21 separating it and going through a separate
22 process. There's no reason to not include that
23 process now. This is a priority site, and the

1 plan already included a barrier from the tidal
2 influence, and there was a good reason for
3 including that barrier. And now it is not
4 there under a fiction that it's going to be
5 done separately at a different time, which is
6 maybe eight years henceforth. And that's a big
7 "maybe" that no one can count on. And there is
8 not good reason for it not to be done now.

9 Thank you.

10 JOHANNA LYONS: My name is Johanna
11 Lyons, and I am the Seacoast Anti-Pollution
12 League's representative to the Restoration
13 Advisory Board. I'm going. to be reading a
14 statement from the Seacoast Anti-Pollution
15 League.

16 The Seacoast Anti-Pollution League
17 offers these comments in response to the
18 proposed remedial action plan for the Jamaica
19 Island Landfill, also referred to as Operable
20 Unit 3 or OU3. SAPL is a community grassroots
21 organization whose mission to protect public
22 health and safety and monitor threats to
23 wildlife and the ecosystem in the seacoast

1 regions of New Hampshire, southern Maine, and
2 northern Massachusetts.

3 After careful and thorough review of the
4 data supporting the Navy's proposed plan, our
5 view is that the cap alone is an unfit option;
6 that a barrier is necessary to address tidal
7 migration of toxins from the landfill; that
8 serious unanswered questions about threats to
9 human health and the ecosystems remain; and
10 that the Navy needs to take immediate steps to
11 put adequate protections in place. However,
12 before we go into the details supporting these
13 views, we'd first like to comment on the
14 process.

15 To fulfill our mission, we have
16 participated on the Restoration Advisory Board
17 since 1995. That board has provided a forum in
18 which we could express community perspectives
19 on environmental conditions at the shipyard.
20 However, it has not met since November 30,
21 2000. As a result, a vital link to the
22 communications between community and the
23 shipyard was missing while some crucial

1 decisions were made about the Jamaica Island
2 Landfill. Ironically, the Navy's feasibility
3 study describing five alternatives being
4 considered for the Jamaica Island cleanup was
5 also made available to the public in November
6 2000. Any citizens who read that study would
7 have been unaware that major decisions were
8 already being made which could render some of
9 the alternatives described in the document
10 irrelevant. That's because it's not -- it was
11 only after the document was released that the
12 Navy decided to separate out the intertidal
13 zone adjacent to Operable Unit 3 into a new
14 Operable Unit 6, and to remove the Remedial
15 Action Alternative No. 5 from any further
16 current consideration.

17 Those decisions raised a whole new set
18 of unanswered questions for which the community
19 deserves some answers. For example, the
20 following questions about the new Operable Unit
21 6 are of great concern to us and impact heavily
22 on our response to the OU3 plan. What is the
23 time line for study and remediation for OU6?

1 How does the new OU6 relate to Operable Units 3
2 and 4? How will the OU3 remedy currently
3 proposed by the Navy affect this unit? What
4 funding would be available to deal with this
5 new unit? What are the risks to human health
6 from the seeps located in the unit? What the
7 risks to the estuary environment from delaying
8 remedial action for this unit?

9 However, quite apart from the specific
10 concerns of that nature, SAPL, the residents
11 that it represents through its membership, and
12 other residents who voiced concerns in other
13 forums have general apprehensions about the
14 proposed remedial action plan before our
15 community and the process whereby it is being
16 implemented. First among these concerns
17 involves a lack of adequate opinion -- options.
18 In regard to providing remedial action choices
19 for the public to respond to, the Navy has
20 failed the local community. As already noted,
21 the most comprehensive choice, Alternative 5,
22 has been removed from consideration. That
23 alternative is the only one that deals with the

1 major concern of the community: the control of
2 toxic pollutants into the estuary.

3 Alternatives 1 and 2 are essentially
4 do-nothing choices. The State of Maine would
5 not agree to such choices in any event, so they
6 do not represent genuine options. Alternatives
7 3 and 4 are merely variations on the same
8 theme, capping the top of the landfill. Those
9 technical variations could just as well have
10 been left to the design phase.

11 Basically, the community has been given
12 one choice at this time: a landfill cap on the
13 center of Jamaica Island site. Additional
14 concerns about this site's impact on the
15 estuary are eschewed by a deft move: the
16 redefinition of the site's shoreline as another
17 operable unit, which is slated to be studied
18 for many years before any remedial actions, if
19 any, are finally taken.

20 We are also concerned that the
21 community's voice is not adequately being heard
22 in the process. The shipyard is, after all,
23 located in New England. In our town meeting

1 and city council hearings, we expect as a
2 matter of right to discuss all options for
3 solving a particular problem. In that regard,
4 we hope that the Environmental Protection
5 Agency and the U.S. Navy fully understand the
6 community's concerns about the Navy's proposal.

7 I'd like now to summarize the many
8 concerns you've heard SAPL and others raise at
9 public meetings regarding the proposed remedial
10 action plan for OU3.

11 First, let me explain why we feel that
12 the cap alone is an unfit option. The Jamaica
13 Island Landfill was constructed on a mud flat,
14 and so is among these unique Superfund sites
15 that is subject to both groundwater flows and
16 saltwater tidal flushings. In other words,
17 tides flush into and out of the Superfund site
18 every day. Viewing the site from a three-
19 dimensional perspective, those combined
20 hydrological flows are crucial variables in
21 regard to human risks and the health of the
22 estuary. Assuming the cap is properly
23 designed, constructed and maintained, it will

1 prevent precipitation from infiltrating the
2 site and will divert surface water drainage
3 within the boundaries of the cap. However,
4 only an estimated one-third of the water
5 currently leaching through the landfill comes
6 from precipitation. The remaining two-thirds
7 comes from tidal migration, something the cap
8 does not address at all.

9 While the cap would inhibit the vertical
10 migration from the surface down to the ground,
11 the cap does not prevent lateral migration of
12 groundwater into and out of the landfill. That
13 said, we feel the Navy must take immediate
14 steps to address tidal migration and the
15 construction of the barrier.

16 After 10 years of study, the Navy has
17 been unable to prove the barrier is not needed.
18 In its desire to take even more time to say the
19 matter not be lightly taken, when questions
20 remain regarding the health and safety of
21 people in the ecosystem after prolonged study,
22 the only responsible approach is a
23 precautionary one. In this case, that means

1 moving ahead on a barrier.

2 What are some of the serious questions
3 that remain? There are many, and I will
4 address just a few key examples, the first of
5 which involves dioxin. The Navy only began
6 testing dioxin in 1998 and did indeed find
7 dioxin on-shore at the landfill. However, even
8 after finding it on-shore, it never tested for
9 dioxin in the seeps, which means that the Navy
10 regulatory agency nor the public knows whether
11 this dangerous toxin is leaking out of the
12 landfill.

13 The Navy currently views the site as one
14 of low risk to surrounding human communities.
15 Dioxin is a known human carcinogen, even at low
16 levels, and doesn't tend to break down or
17 dilute in water. Finding dioxin in the seeps
18 could alter the risk level of the site
19 significantly, so there is a potential that all
20 the risks calculated in prior assessments are
21 too low.

22 Second, the Navy has failed to address
23 sea level rise in designing an action plan to

1 contain the toxins at the site. This is a
2 serious oversight in designing a remediation
3 plan for a site that is a daily affected by
4 tides. According to NOAH and other government
5 research agencies and much scientific research,
6 our region is expected to endure sea level rise
7 in the near future, as well as increased heavy
8 weather events brought on by global warming.
9 We refer here to events beyond the 100-year and
10 200-year storms that are factored into your
11 design. This means that portions of the site
12 that are above current sea level and that
13 contain serious toxins that have never been
14 leached out by tides will soon be exposed to
15 tidal flushing. Unless tidal migration is
16 addressed immediately, it is reasonable to
17 assume that the public and the surrounding
18 estuary will be left completely unprotected
19 from these highly probable circumstances.

20 Third, contaminants present in Sullivan
21 Point have been shown to pose a significantly
22 higher risk to human health and safety, and the
23 Navy has not been able to rule out that some of

1 these contaminants may come from the landfill.
2 There exists a possibility that fractures in
3 the bedrock allow the JILF groundwater to
4 migrate in the direction of Sullivan Point.

5 Last, important questions about how and
6 when monitoring will be implemented also remain
7 unanswered. Long-term monitoring has been
8 alluded to, but no contingency action plans are
9 tied to this monitoring. The Navy makes
10 frequent references to funding problems to
11 prevent them from pursuing comprehensive
12 remedies in the near future. These constant
13 allusions to funding problems do not reassure
14 the community that monitoring will ever result
15 in any remedial actions.

16 Please be aware that the residents of
17 the area are concerned about human risks at the
18 site, but they are also highly concerned with
19 the health of the estuary. Most of the
20 quantitative analysis to date has focused
21 solely on the human health risk at the
22 immediate landfill site. However, there has
23 been little data generated that speaks to

1 overall health and ecosystem and to those who
2 want to know if it will ever be safe to fish
3 and swim in the Piscataqua River, the
4 community's front yard, so to speak.

5 However, the Seacoast Anti-Pollution
6 League does recognize that a landfill cap would
7 be an integral part of any remedial action
8 plan. We can support the Navy's desire to
9 proceed with the capping project if certain
10 provisions are met. In that regard, we insist
11 upon two provisions: First, that the Navy
12 promulgate a contingency plan that will retain
13 the option of a tidal barrier as described in
14 their Alternative 5 in the November 2000
15 feasibility study and that the option be
16 pursued immediately; second, that the Navy
17 begin immediate testing of the seawater and
18 sediment in Operable Unit 6 to determine the
19 discharge levels of toxins, including dioxin in
20 that part of the landfill. If a time line that
21 is acceptable to the State of Maine and the
22 community should be scheduled for these tests,
23 given these two provisions are met, we support

1 the Navy's current proposal for a landfill cap.

2 In conclusion, the Seacoast
3 Anti-Pollution League believes that the Navy
4 has arrived at a proposal that ignores tidal
5 migration, the very reason for which it has
6 conducted such a careful study in the first
7 place. To be sure, a landfill cap involves
8 some of the -- to be sure, the landfill cap
9 solves some of the problems, but considered
10 apart from the tidal barrier, it raises new
11 questions and leaves many important concerns
12 unresolved. Why has the Navy spent so long to
13 come up with one solution? Landfill caps have
14 been implemented in many other Superfund sites
15 elsewhere. The technology is already well
16 developed. Well, why, then, take 10 years to
17 study the problem? How many more years might
18 it take to study the need for a barrier? And
19 what risks might the public and estuary face
20 from toxic outflows during that time?

21 These are all questions and concerns
22 that SAPL and the community take seriously. We
23 urge the Navy to devise precautionary

1 solutions, rather than spending more time and
2 money in the vain hope that these solutions
3 might prove to be unnecessary.

4 Thank you.

5 MATTHEW BROCK: My name is Matthew
6 Brock. I'm a resident of Kittery Point.

7 I want to focus on one issue that is of
8 concern to me, and that is that, a few weeks
9 ago, the Navy was granted a license, or
10 preliminarily granted a license for a
11 commercial hazardous waste storage facility at
12 the Portsmouth Naval Shipyard, and as part of
13 the licensing process the Navy represented to
14 the State Board of Environmental Protection
15 that it had a schedule in place to clean up the
16 Superfund site that currently exists at the
17 shipyard.

18 What I have heard tonight, though, tells
19 me that the Navy is now saying they want to
20 delay that cleanup for years. They want to
21 study it more for years, and there is no
22 schedule in place to determine when that
23 cleanup is going to be done.

1 Based on that, I'm asking the Navy to
2 withdraw its application for a commercial
3 hazardous waste storage facility license. We
4 don't need more hazardous waste brought to the
5 Town of Kittery until the current Superfund
6 problem is addressed. And I would also ask the
7 Maine DEP representative who is present here to
8 confer with your colleague, Joan Jones of the
9 Maine DEP, to be sure she understands really
10 the fact that, currently, there is in cleanup
11 schedule for -- a comprehensive cleanup
12 schedule for the Superfund site.

13 Thank you.

14 SUSAN CRESS HAMILTON: My name is Susan
15 Cress Hamilton. I would like to submit the
16 following testimony as a Kittery citizen and
17 homeowner, and as a business owner in
18 Portsmouth since 1978.

19 I have educated myself about the
20 hazardous waste cleanup process at the
21 Portsmouth Naval Shipyard since it was
22 designated a Superfund site by the EPA in 1994.
23 I have recently gotten more involved in the

1 process by attending the November 30th
2 Restoration Advisory Board meeting and the
3 Navy's informational open house on February
4 1st.

5 I take strong objection to the Navy's
6 proposed remedial action plan for the Jamaica
7 Island Landfill, both in the process in which
8 it was created and in its substance. I
9 strongly favor an action plan that would
10 include a barrier to address tidal migration of
11 contaminants from the landfill into the
12 Piscataqua River.

13 My primary objections to the plan before
14 us are as follows:

15 1.) The last-minute decision by the
16 Navy to separate off the intertidal zone as
17 OU6, thus eliminating Alternative 5 of the
18 draft plan and avoiding the migration of
19 contaminated groundwater as an issue is a
20 flagrant undermining of the process and a great
21 blow to public confidence. As late as the
22 November 30th RAB meeting, Alternative 5 was
23 still being promoted as viable to the public

1 and was eliminated after that meeting without
2 the knowledge of the Restoration Advisory Board
3 and its citizen members.

4 2.) There are no adequate choices
5 provided by this plan. In fact, the Navy's
6 Alternative 3 cannot be called an alternative
7 at all, as it is the only choice. Early on in
8 the process, the Maine DEP made it clear to the
9 Navy that it would not accept Alternatives 1
10 and 2 under any circumstance, effectively
11 eliminating them as options, and Alternative 3
12 and 4 are really only variations on the cap
13 solution. The public is being misled that
14 there are alternatives in this plan.

15 3.) The proposed plan does not even
16 look at the contact of waste materials at the
17 landfill with the tides that flow in out every
18 day. Even the Navy's own study says that
19 two-thirds of the water existing -- exiting
20 through the hazardous waste landfill comes from
21 the groundwater flow and from tidal influx and
22 only a third from precipitation. The cap
23 proposal will only inhibit vertical migration

1 of water from the surface down and will not
2 prevent lateral migration into and out of the
3 site, allowing contaminants from the waste to
4 migrate off the site into the Piscataqua
5 River.

6 4.) There should be immediate testing
7 for dioxin done now at the landfill seeps as it
8 is relevant to the action plan before us.
9 Dioxin has been detected off-shore in sediment,
10 mussels, and juvenile lobsters as recently as
11 January 2001 in the Navy's own interim
12 off-shore monitoring study. The first time the
13 Navy tested for dioxin was in 1998 at Site 29.
14 Because of the estaurine ecological risk
15 assessment, the off-shore human health risk
16 assessment, the groundwater monitoring at the
17 Jamaica Island Landfill, and the 1996-97 seep
18 sediment samplings were all conducted prior to
19 '98 without dioxin testing, there is great
20 potential that all these prior assessments are
21 too low. Dioxin is a potent carcinogen in low
22 concentrations and does not tend to break down.
23 As recently as January 19th, the National

1 Institute of Health changed its listing of
2 dioxin from, quote, reasonably anticipated
3 category to a known human carcinogen.

4 5.) It is incredulous that the Navy,
5 the polluter, has taken 10 years or more of
6 study to come up with the obvious and
7 questionable solution of a cap, a solution that
8 has been used at many other Superfund sites and
9 with already established technology. Repeated
10 questions to Fred Evans, Navy remedial project
11 manager for the specific dollar amount, spent
12 to date on JILF, have not been answered. We do
13 know that total funding to date for all the
14 shipyard Superfund sites is over \$23 million.
15 No wonder the public's frustrated and angry at
16 the inadequacy of the solution and the
17 unanswered questions left with us in this
18 process.

19 The pollution concerns involved in the
20 shoreline area now called OU6 should have been
21 addressed all along, and now the Navy wants us
22 to wait another five years. This record of
23 decision by the Navy and the EPA is of great

1 importance to our community. We have been
2 patient and tolerant with this process. The
3 Navy has been a large seacoast employer in the
4 past, but has also been the creator of
5 hazardous waste and pollution in a fragile,
6 unique estuary. It is time for the Navy to
7 take responsibility and action for its
8 Superfund sites. The Jamaica Island Landfill
9 is only one of many Superfund sites at the
10 facility to be dealt with. By choosing to
11 delay/avoid/disregard any real solution for
12 this site, the Navy has put our community on
13 alert that we cannot trust them to follow
14 through in the future.

15 The EPA has so far gone along with the
16 Navy's proposals for the Jamaica Island
17 Landfill. They now stand alone as the only
18 signatory on this decision in a position to
19 call for a real remedial action plan from the
20 polluter. There is still time for the EPA to
21 come forth to protect human health and the
22 health of our ecosystem by demanding that the
23 Navy place a barrier as well as a cap at

1 Jamaica Island Landfill.

2 MACY MORSE: My name is Macy Morse, and
3 I live in Portsmouth, New Hampshire.

4 I moved to Portsmouth in 1986, and I
5 think it was that winter that Kenneth Chen from
6 the EPA was studying the pollution at the
7 Portsmouth Naval Shipyard. I was going to say
8 it was before some of you were born, but -- I
9 was 65 years old at that time. I have now just
10 turned 80, and the EPA and the Navy have not
11 yet made a decision about what to do about the
12 Jamaica Island Landfill, although it's been
13 declared a Superfund site. I wonder why they
14 haven't done this.

15 I know that -- you know, it's been 15
16 long years, and people get tired of working on
17 something after that period of time, and coming
18 to the RAB meetings and seeing -- going over
19 this information over and over again, going
20 back to your offices, working out solutions
21 with your teams and coming up with nothing new,
22 I imagine that you really are sick and tired of
23 working on this project. I would think you

1 would be. I would be. But then I wonder,
2 who's working on this? Who are these teams?
3 How -- what experts? How expert are these
4 people? How adequate? What -- why have they
5 come up with this cap, this precipitous
6 decision to only put a cap on this dangerous
7 landfill?

8 There are plenty of people here tonight
9 who have talked about the technical aspects and
10 know the technical aspects. But I don't
11 understand why you can't come up with this, and
12 I'm very disappointed. And I hope that there
13 can be a decision.

14 AN UNIDENTIFIED VOICE: I think it --
15 myself, personally, I believe regardless of
16 what they say, the answer to your question is
17 money.

18 MS. MORSE: Well, I was going to come to
19 that.

20 If we put this cap on there, this could
21 make available for commercial use, this area.
22 And then, you know, I won't live long enough
23 probably to see the barrier put up or any -

1 any safeguard against further pollution.

2 But I do -- but I do -- I do agree with
3 you that -- that it's a commercial -- could be
4 a commercial use. And I'm disappointed.

5 LISA KEMO: Good evening. I'd like to
6 thank you for coming out this evening to hear
7 us out. My name is Lisa Kemo, I live in
8 Kittery, and the reason that I'm here is
9 because I settled in this area several years
10 ago because I wanted to raise my family in an
11 environment -- in a healthy environment against
12 the backdrop of that beautiful river and the
13 Atlantic Ocean out there. And it took me a
14 while, I have to admit, before I became
15 educated about this situation at the Portsmouth
16 Naval Shipyard.

17 Now, I have to be honest and say that
18 I -- in my life, there have been times where I
19 have wished that I could have shirked my
20 responsibilities and my duties, but common
21 decency and propriety and common sense have
22 always dictated to me that I cannot shirk my
23 duties. Yet the United States government and

1 the -- their navy seem to answer to some higher
2 code of ethics which indicates that they can
3 relieve themselves of their responsibility, and
4 that's obviously why we have to come out here
5 tonight and ask them again, ask them to clean
6 up the heinous mess that they made over 30
7 years ago.

8 And I know that I'm astounded at the
9 incredible wisdom that the Navy demonstrated
10 when they constructed a landfill out of 25
11 acres of mud flat. That's incredible. Along
12 the Piscataqua River, no less, a watershed.
13 And when we consider the heinous substances
14 that they fully planned to bury in that
15 landfill, we are further assured of the Navy's
16 profound wisdom and their care of our lands and
17 waterways.

18 These heinous substances are known
19 toxins and heavy metals, some of them named
20 tonight -- dioxin, PCBs -- regardless of the
21 flimsy reasons that the Navy offers us as to
22 why they dropped Option No. 5, which
23 specifically included capping the landfill to

1 prevent precipitation from entering it and
2 erecting a barrier that would address the tidal
3 and groundwater migration from that site into
4 surrounding areas.

5 And I'm here tonight to specifically
6 demand of you that you stop dragging your feet
7 and that you clean up your mess and that you
8 cap the thing and you put a barrier on it and
9 you contain it. Because you're already in
10 possession of data that indicates that
11 migration of those substances are in fact
12 occurring regularly -- right now, even, as the
13 tides wash in and out of that area. It's not
14 rocket science we're talking here, it's common
15 sense. And it's decency and it's a matter of
16 right and wrong, and you've been wrong for a
17 long time. And you have a chance to be right
18 and do the right thing for the people who live
19 in this area.

20 Thank you very much.

21 JOANIE PRADID: Good evening. My name
22 is Joanie Pradid and I'm a resident of
23 Kensington, New Hampshire.

1 I'm here tonight because I feel that the
2 plan presented by the Navy for addressing the
3 Jamaica Island Landfill Superfund site is
4 inadequate. I concur with the statements made
5 by the Seacoast Anti-Pollution League and many
6 others here tonight, so I won't repeat many of
7 their statements; but I do want to voice my
8 concern that the Navy's plan fails to address
9 the most significant concerns that area
10 residents have put out about their own public
11 health and safety and about the health of the
12 estuary and the wildlife it supports.

13 While the cap is a sane portion of any
14 remediation plan on such a landfill, it is a
15 small part of the necessary equation to remedy
16 this site, a site that tides wash into and out
17 of every day. This tidal migration occurs now,
18 it will occur when the cap is in place, and it
19 will occur indefinitely until the barrier is in
20 place to prevent it.

21 At the previous public meeting, the Navy
22 stated that they will address this tidal
23 migration issue separately, and indicated that

1 even that -- that even consideration of the
2 issue might be tabled for five to eight years.
3 This is an unacceptable delay in the fact-
4 finding process that has already taken 10
5 years. After years of testing, the Navy has
6 not been able to remove all doubt that
7 dangerous toxins might still be leaching from
8 the landfill into the surrounding area.
9 Moreover, you can't find what you don't test
10 for. And it is surprising to me as a citizen
11 that while dioxin has been found in the
12 landfill, no testing has been done to see if
13 this highly dangerous toxin is leaching from
14 the site.

15 There is also the notion expressed at
16 one point by the EPA that the toxins at the
17 site have long ago leached out with the
18 incoming and outgoing tides. That may be true
19 or it may not be true. We don't know yet.
20 However, what is most certainly true is this:
21 that sitting on top of that preleached section
22 is a highly toxic portion of the landfill that
23 has never been touched by the tides as it is

1 currently above sea level. But sea level, even
2 by the most conservative government estimates,
3 is rising in general and is slated to rise in
4 our area, too. Heavy weather events that swell
5 the tides temporarily are on the increase as
6 well. It is highly conceivable that, even in
7 the near term, we could see a rise in water
8 levels that exposes a whole new previous
9 unleached portion of the landfill to tidal
10 migration. Failing to account for these known
11 factors, these known probabilities, is failing
12 to adequately assure public health and safety.

13 I understand that funding is an issue,
14 both in the collection of data and in the
15 follow-through of any plan. That said, I urge
16 the Navy to adequately fund the cleanup efforts
17 of sites placed on its national priorities
18 list, this site included. Current and adequate
19 funding levels have led to a prolonged data
20 collection period and an incomplete proposed
21 plan. That's something that I think adequate
22 attention from the budgetary ranks of the Navy
23 could help to address.

1 Finally, I'd like to say that I speak as
2 one who values the estuary and its importance
3 to the local marine ecosystem, but I also speak
4 as a parent who would like to know that when I
5 bring my child, his friends, his cousins, to
6 recreate in the area, I bring them to a place
7 that the agencies we entrust our public safety
8 to have tried their best to protect them from
9 the toxins that could harm them. Where serious
10 questions remain about safety, agencies should
11 act in the public interest. In this case, that
12 means not just a cap, but also a barrier at
13 OU3.

14 Thanks.

15 DAVID HILLS: My name is David Hills and
16 I live in Durham, New Hampshire, and I have no
17 more idea what I'm going to say tonight than
18 any of you. So I'm just going to try to speak
19 from somewhere out of my head and down a little
20 bit closer to my heart.

21 Ancestors of mine came up the Oyster
22 River in 1655 and settled in Durham, so my
23 children are the 11th generation on the farm

1 where we live, so I have a strong sense of
2 commitment to the area.

3 I want to address the Navy and the EPA
4 and the Maine Department of Environmental
5 Protection as organizations and not those of
6 you sitting here as individuals, so don't take
7 personally what I say, unless it applies, and
8 then you can take it personally.

9 I think that you've heard from
10 everybody, and I guess each of us should make
11 our own statements as a stand-alone statement
12 since they're being taken for public record,
13 but I don't really want to spend time talking
14 about what everybody else has already said.
15 It's very clear that the Navy hasn't been doing
16 the monitoring that it could have been doing.
17 It's very clear that millions of dollars have
18 been spent. I have not, to be honest with you,
19 had any interest in coming to the RAB meetings,
20 because -- and I feel guilty saying that --
21 because, from what I've heard, it's worse than
22 watching paint dry. And that may be the
23 procedure that has to occur, but I don't do

1 well with that kind of procedure, so I've just
2 stayed away because I probably would have
3 gotten arrested.

4 But I think that, you know, we all look
5 at people sitting on the street in major
6 metropolitan areas who are overdressed and are
7 babbling and we think of them as crazy. I
8 think of all of us as crazy because we're
9 coming to a meeting where we really feel like
10 the people who are sitting in front of us --
11 the organizations, excuse me, that are
12 represented by the people sitting in front of
13 us, really aren't interested in listening. if
14 they were, how would it have just occurred that
15 Alternative No. 5 just disappeared, just
16 vaporized? We thought it was one of the ones
17 that was being considered and then found out
18 that it was no longer on the list.

19 So, are we suspicious? Are we paranoid?
20 I don't know. I guess we just don't feel like
21 this is -- part of me feels like this really
22 isn't going to make any difference. And when
23 I've talked to people about coming to this

1 meeting tonight, there's sort of a
2 schizophrenia between, you have to come because
3 not to come is crazy, and yet to come is crazy,
4 too, because it's not going to make any
5 difference.

6 I'm a romantic. I'd like to think that
7 each of you, since you've all stated tonight
8 that you do have some influence -- you may not
9 be the signatories, but you do actually have
10 some influence with the bodies that you're here
11 to represent, could actually surprise people,
12 surprise all of us in this room, and maybe even
13 surprise the rest of the people on the teams
14 and say, "You know what? That feedback really
15 affected us. It really did. And even though
16 we're kind of getting a push from a certain
17 direction that may be financial, may be
18 bureaucratic, may be this is the way it's done
19 everywhere else, don't set a precedent, it's
20 just not okay in this situation, because these
21 people really touched us by what they said and
22 we really believe that this is not the right
23 solution."

1 I think that that would be my hope.
2 That would be my hope, that you would actually
3 listen, and that you more than listen: you
4 would recognize that the studies that have been
5 done, that have shown in the eel grass that
6 much of what is being said here tonight is in
7 fact true, and the fact that people have an
8 incredible amount of skepticism that everything
9 will ever be done.

10 The quick and dirty solution is put a
11 cap on it. I think it's not very hard for me
12 to imagine at all that the Navy is looking at
13 the former prison site as a valuable piece of
14 real estate, and as Macy Moore has suggested,
15 you know, that may be a great parking area once,
16 you put a cap on it, and then, great, then we
17 have a revenue source for the Navy which is
18 trying for look for ways to turn property into
19 something that higher-ups can be happier about.

20 I also just want to say -- and, again,
21 try not to personalize this -- but to not have
22 the EPA here at the public meeting, I haven't
23 heard anybody address why nobody from an

1 organization of that size with that kind of a
2 budget couldn't have been here that night. I
3 think, again, it's a shame that the
4 Environmental Protection Agency wasn't here to
5 answer questions.

6 Thank you.

7 DOUG BOGAN: My name is Doug Bogan. I'm
8 community cochair of the Restoration Advisory
9 Board for the shipyard, but I'm here tonight to
10 speak in my capacity as New Hampshire program
11 director for Clean Water Action, a national
12 environmental group, and our approximately 400
13 members in the seacoast region, and also as a
14 15-year resident of Portsmouth. I can see the
15 shipyard from my back porch, actually.

16 I think from everything you've heard
17 here tonight, it's pretty clear that the public
18 was not really given much of a choice. In my
19 time watching this process for quite a few
20 years, more than I thought, I think it's clear
21 that the Navy has been very good at basically
22 whittling down the choices to the point that
23 there isn't really much of a choice and we are

1 being given the Navy's choice. And it's also
2 clear that it's not much different than what
3 they would have proposed to us five years ago.
4 And I just find that a frustration, as a member
5 of the Restoration Advisory Hoard and member of
6 the community here, to not see much progress in
7 that time. And I think the public opinion, as
8 expressed here tonight and in other forums, is
9 clearly on the side of dealing with the
10 containment issue with the migration of
11 pollutants from the site, of perhaps building a
12 barrier to address them, and it's unfortunate
13 that the Navy has come up with a way to leave
14 that issue aside for the time being.

15 The designation of this new operable
16 unit, Operable Unit 6, or even the original
17 split between the on-shore and the off-shore
18 units that was done quite a few years back -- I
19 think back in the early '90s -- it's all really
20 a clever bureaucratic maneuver, but it's
21 essentially a fiction. You know, the real
22 world does not consist of units, separate
23 entities. This really bears little resemblance

1 to the reality of this site or of any
2 environment. We can't deal with each of these
3 operable units in isolation. One does affect
4 the other. And to treat them independently, in
5 isolation, it really does a disservice to the
6 basic ecology of our area. To suggest that you
7 could analyze the water coming out of these
8 seeps and not worry about the fact that in
9 Operable Unit 4, the off- shore area, we
10 already have significant contamination, the
11 sediments are heavily contaminated with lead
12 and other toxins, heavy metals, and that
13 somehow it's okay. As long as the water
14 quality isn't too bad coming out of that seep,
15 it doesn't matter that you're adding on to a
16 much larger problem off-shore.

17 We understand that capping is a
18 necessity. It is a prerequisite, but it's
19 clearly not the only thing that needs to be
20 done with this site. It should be seen as a
21 bare minimum. It's really insufficient to deal
22 comprehensively with the complete landfill
23 problem.

1 Everyone admits that there are
2 uncertainties in regard to the seep
3 contamination impacts. Evidently, though, only
4 the Maine Department of Environmental
5 Protection thinks that those impacts may be
6 important enough at this time to warrant
7 further investigation. The other agencies
8 evidently are not of that opinion. And we are
9 glad that DEP has stood up, I think, for that
10 concern, and it does, though, indicate much of
11 the uncertainty that exists before us here.

12 As has been mentioned by some other
13 people, there are other uncertainties that have
14 come up. I would particularly like to
15 emphasize the dioxin issue because it has only
16 been recently identified at the shipyard, and
17 we really don't know enough about the extent of
18 the contamination and whether it is coming from
19 the seeps or not and whether it is indeed
20 getting into the organisms living off-shore.
21 But the evidence does seem to indicate that
22 that is indeed occurring.

23 Unfortunately, the information that's

1 been reported, that's in the repositories,
2 that's in all the documents, is not really in a
3 form that even myself -- let alone any
4 layperson -- could really compare and contrast
5 with other sites, other studies that have been
6 done in the estuary. So it is very difficult
7 to make sense of all this. Clearly, though,
8 there is an uncertainty there.

9 Now, I would also like to mention that
10 the federal government in the form of the EPA
11 put out a report, I believe last fall, on
12 dioxin. It's an assessment that was many years
13 in the making. I believe they were probably
14 sued, as with many things that they do, it
15 takes a lot of pressure, legal pressure to get
16 them to actually cough up the report. But they
17 did put out this report, and it did indicate
18 that the risk factors for dioxin were 10 to
19 perhaps 100 times greater than what they had
20 previously thought. As was mentioned earlier
21 tonight, it's always been determined that
22 dioxin is a known human carcinogen. We are
23 learning more and more about this dangerous

1 toxin every day. And there are also many
2 uncertainties that remain in the total health
3 impact of dioxin and related compounds. We
4 know that dioxin is a hormone disrupter. We
5 know that the damage to our endocrine systems
6 could actually be much greater and much more
7 widespread than potential cancer impacts; yet
8 most risk assessments only take into account
9 the cancer impacts. And we just don't know
10 enough about what effect it has on our ability
11 to reproduce, on our children and their
12 children, and that's a very serious issue.

13 And we also know from this EPA
14 assessment that there is enough dioxin out
15 there in the environment, in our bodies, in the
16 average person's body, to cause potential
17 health problems. So it seems the obvious
18 judgment from that is that we should not be
19 putting any more dioxin into our bodies or into
20 our environment. So we really have to wonder
21 whether this site does not deserve much more
22 attention in that regard.

23 Again, this points out to the flaws in

1 the risk assessment process. Environmentalists
2 for decades have been arguing and complaining
3 about the limitations of risk assessment. And
4 there really are many reasons that I won't go
5 into tonight or bore you with, but clearly risk
6 assessment is only one way to determine whether
7 a given practice is safe or a given situation
8 warrants more protection.

9 It also was mentioned before about the
10 potential for future contamination, the fact
11 that sea level is rising, is due to rise at a
12 greater rate in future years, and also that we
13 are experiencing climate changes. Scientists
14 are more and more coming to very strong
15 conclusions that we are disrupting our global
16 climate and our local climate, and being on the
17 seacoast, we are particularly vulnerable to
18 major storms, 100-year storms, 500 year storms,
19 perhaps 1,000-year storms -- if you will, the
20 perfect storm that could cause very serious
21 erosional impacts, flooding, storm surges that
22 could overwhelm any existing capability to hold
23 back the tide. And so all these uncertainties

1 should lead to a sense of precaution, not
2 inaction. And I would like to point out that
3 the idea of precaution has been formulated into
4 a principle that's gaining more and more
5 allegiance among scientists and many other
6 public policy people.

7 And I would just like to read you a
8 definition of what the precautionary principle
9 is being described as. This is one of the one
10 formulation of it. "When an activity, or in
11 this case, a given situation, raises threats of
12 harm to human health or the environment,
13 precautionary measures should be taken, even if
14 some cause-and-effect relationships are not
15 fully established scientifically."

16 So when we have uncertainty, we really
17 need to be acting in a precautionary way. And
18 that may seem a very common-sense kind of idea,
19 but it also has been inscribed in a number of
20 international treaties. The Rio Declaration of
21 1992, which was signed by the elder President
22 Bush, incorporates that principle.

23 And I would also like to read you

1 another quote from our new EPA chief, Christie
2 Todd Whitman. This was actually stated before
3 she became EPA chief in a speech this past
4 October to the National Academy of Sciences
5 when she was just a lowly governor of the state
6 with the most toxic waste sites in the country,
7 I believe. She said, "Policymakers need to
8 take a precautionary approach to environmental
9 protection. We must acknowledge that
10 uncertainty is inherent in managing natural
11 resources, recognize it is usually better --
12 usually easier to prevent environmental damage
13 than to repair it later, and to shift the
14 burden of proof away from those advocating
15 protection toward those proposing an action
16 that may be harmful."

17 I think we would do well to take to
18 heart her words and apply them to the situation
19 with the shipyard, because, as we've all
20 described, there are many, many uncertainties
21 here, and a precautionary approach would
22 definitely say, let's address them now; let's
23 not wait five or 10 or more years to deal with

1 the problem later.

2 So I really feel that the burden of
3 proof should be on the Navy to demonstrate that
4 these seeps don't represent a threat to our
5 water quality and quality of the estuary, given
6 all these uncertainties and potential for
7 future releases. So I'm here to support the
8 recommendations described earlier by Seacoast
9 Anti-Pollution League and others for retaining
10 the cutoff barrier option, and really to
11 investigate it further as something that should
12 be instituted sooner rather than later. The
13 Navy should demonstrate why it's not needed, in
14 their view, not simply put the issue off into
15 the future. There should be immediate sampling
16 of the seeps, a determination of the localized
17 toxicity, what effect they really are having on
18 the local ecosystem, in the mud flats and
19 beyond. And, also, I would add there should be
20 a timely investigation of the likely impact of
21 sea level rise, of storm surges of other
22 impacts due to global warming, and just the
23 nature of our local environment.

1 Now, just speaking for a moment as a
2 member of the Restoration Advisory Board, I do
3 have to say in watching this process that I
4 feel we've been sold a bill of goods when we
5 chose, I think a couple years ago, to address
6 the landfill first. We were given a choice of,
7 Do you want to move forward with the landfill
8 cleanup or do you to deal with the -- it's call
9 the DRMO, the recycling center. We don't have
10 money to do both. That was basically the way
11 they presented it to us. We chose the
12 landfill, given that the landfill was bigger
13 and potentially a much more serious problem and
14 really needs to be addressed. But here we are
15 now, and we don't see a real comprehensive
16 solution for the landfill.

17 We shouldn't have to wait upwards of
18 perhaps another decade to deal with --
19 comprehensively with the landfill problems.
20 These problems need to be addressed now. We
21 need to have some assurance from the Navy that
22 they will investigate a solution to that
23 problem, and the public really deserves a

1 better response than they've gotten so far.

2 Thank you.

3 MR. PLAISTED: I'm going to hesitate for
4 a moment, and ask the stenographer if she's
5 doing okay.

6 THE REPORTER: I'm fine, thank you.

7 MR. PLAISTED: Okay.

8 AN UNIDENTIFIED VOICE: I can make it
9 short. I've got one question.

10 Seeing that this is also involving New
11 Hampshire -- part of that river is in New
12 Hampshire -- how come we don't have an EPA
13 representative sitting up there from New
14 Hampshire that we can go to?

15 This is a governmental facility. It is
16 affecting two states. How come New Hampshire
17 does not have an EPA representative on that
18 board?

19 MR. PLAISTED: Anyone else?

20 DAVID BURDIK: Good evening. Thanks for
21 coming out.

22 My name is Dave Burdik. I'm a resident
23 of Portsmouth, New Hampshire. I've been a

1 resident for about 10 years. I'd just like to
2 comment on this formal hearing.

3 Since 1994 it's clear that the number-
4 one threat from the Jamaica Island Landfill is
5 through the combination of tidal action and sea
6 level rise. Yet, after six years of
7 deliberations, the EPA and Navy have decided a
8 cap over the top of the landfill is all they
9 can do. We don't know why this is, but suspect
10 it's related to the fact that we're only
11 allowed to speak and not get questions answered
12 tonight. I think it's because we're dealing
13 with large bureaucracies. The people who will
14 ultimately make decisions, the final decisions,
15 aren't in the room tonight, and they're
16 well-insulated.

17 People have thought a little bit about
18 this idea, the landfill cap. It's kind of like
19 taking three bills, say. There's groundwater
20 coming into the landfill; it's a problem.
21 There's rainfall coming into the landfill; it's
22 a problem. And there's tides coming into the
23 landfill; there could be a problem there.

1 Well, let's try to deal with two of
2 these bills, the groundwater and the rainfall.
3 We'll forget the tide. The problem is, I don't
4 think people have done their homework to know
5 what the denomination of the bills are. Okay?
6 So I haven't seen any good quantitative
7 information that says the tidal action
8 represents one-third or two-thirds or nine-
9 tenths of the water moving in and out of that
10 landfill.

11 When it's raining out, I put a hat on or
12 carry an umbrella. Works pretty well. But if
13 I go swimming, a hat or umbrella is not going
14 to do me much good. The Navy has put a toxic
15 landfill in our swimming pool and they're
16 telling us, "It's okay; we're going to put a
17 hat on it." Doesn't cut it for me.

18 Another problem is that there's no clear,
19 monitoring plan in any of the alternatives and
20 the budgets. Perhaps the Navy wants you to
21 believe there's a monitoring plan. I'm sure
22 that they say there is a monitoring plan that's
23 in inaction. But if you look at the summary of,

1 alternatives, Alternative 1, the do-nothing
2 alternative, I assume they would still have to
3 monitor, and yet there's no money in the
4 budget. So it's pretty clear that these
5 budgets are fairly inadequate to really help us
6 understand what these alternatives do and are.

7 Inadequate action to safeguard the
8 public health and environmental quality around
9 the shipyard. Imagine separating the treatment
10 of the landfill, the Jamaica Island Landfill,
11 into surface waters and tidal waters. It was
12 mentioned before that this was a fictional
13 separation, and I agree with that. This is one
14 system and it should be reconsidered. In fact,
15 I plead with the group here to reconsider that.
16 I'm sure the people up here, including Ken,
17 Meghan and the others, feel that they have done
18 nothing wrong over the last six years. But I
19 think it's time -- I think there's a strong
20 message that it's really -- it's time to start
21 doing something right and getting something
22 done in a positive direction, to stem the tide
23 of the toxins leaching from this landfill.

1 Please do not continue on the path you
2 have set out for yourself in November in
3 separating out Alternative 5 and separating
4 this landfill. Demand from your supervisors
5 the freedom to treat the Jamaica island
6 landfill as one unit. It is one system; it
7 should be treated that way. Demand the freedom
8 from your supervisors to do the right thing for
9 the people of Maine and the seacoast of New
10 Hampshire. Consider the significant impacts of
11 this Jamaica Island Landfill on the marshes,
12 mud flats, and sea grasses by the dumping of
13 toxins directly on these habitats. So I ask
14 you, finally, to please put forward a plan to
15 deal with the entire landfill.

16 Thanks.

17 JOHN JOYLE: Good evening. My name is
18 John Joyle. I live in Somersworth, New
19 Hampshire.

20 Lately I've been an advocate concerning
21 many issues that affect my life personally. I
22 remember when I was a young boy growing up when
23 Meldon Thompson tried to force Seabrook down

1 our throats. I wasn't too crazy about that.
2 People had to actually get dragged off fences
3 and beat by state troopers to have their
4 opinions suppressed. I had a big problem with
5 that. Of course, I was too young back then; my
6 dad wouldn't let me go be part of that.

7 I know years ago the Navy must have made
8 a lot of mistakes on the island over here, and
9 I think they realize that. They may have
10 realized that at the time, and I think they're
11 trying to do what's right to correct that a
12 little bit after the fact.

13 I stand before my neighbors from Maine
14 as a New Hampshire resident. I'm very
15 concerned about the entire river and the
16 estuary as well as the property that the Navy
17 now occupies and Maine now claims. And there
18 is a lot of uncertainty in the future, folks.
19 A lot of uncertainty. And the terminologies*
20 and the words that I've been hearing tonight, I
21 can appreciate and I can associate with a lot
22 of them, believe me. "Uncertainty." I looked
23 at this report and I see the word "boundary,"

1 and I see the word "the Maine hazardous waste
2 management rules." The Piscataqua River. I
3 see a lot about groundwater migrating off-shore
4 with tidal water, river water, things that
5 affect our environment. Great Bay estuary,
6 commonly referred to as the Portsmouth Harbor.
7 There's some legends and some maps in here that
8 I've looked at. I'm not a map or a legend guy,
9 but I looked at this and I can read some of
10 this. It's fairly easy to understand. And
11 there's a lot of questions in our -- in our
12 future, and we're going to find out what those
13 might be on April 16th, believe me.

14 But I stand before this audience
15 tonight, and the folks at this table, I commend
16 you for your efforts. I know I wouldn't want
17 your job, and I can see -- and I feel the
18 emotion here as well. I hope and pray that you
19 all do what's right and the organizations that
20 you represent do what's right. But, you know,
21 you have a big problem, myself, personally,
22 trusting the Department of Environmental
23 Protection from the State of Maine, no more

1 than I trust the Revenue Service from the State
2 of Maine. They have given me nothing --
3 nothing -- for 14 and a half years. They've
4 taken some of those dollar bills out of my
5 pocket. As a matter of fact, I don't have any
6 dollar bills in my wallet. Have you got some
7 money I can borrow, there?

8 But all joking aside, folks, you know,
9 this stuff affects our habitat. It affects our
10 seafood. It affects our kids. It affects our
11 air. I mean, this stuff affects everything
12 about us as human beings. And we don't want to
13 get too greedy or generous, as far as that
14 goes. But it's -- it's hard to understand how
15 people feel about this stuff and make those
16 feelings turn into reality.

17 But I just wanted to let you all know
18 that when the word "uncertainty" came up, my
19 mind started thinking. Yeah, there is
20 definitely a lot of uncertainty in the future.
21 And the gentleman that was sitting next to me,
22 I have to agree with him. The State of New
23 Hampshire -- folks, I'm not here to represent

1 the State of New Hampshire. I'm a resident of
2 the State of New Hampshire, a very loud,
3 outspoken advocate, as being a resident of the
4 State of New Hampshire. The State of New
5 Hampshire has laid claim to that entire river
6 and all of those islands over there. Okay?
7 And I'm not here to argue and bicker about that
8 issue. That's out of our hands, pretty well
9 much like this may be out of our hands. But
10 I'm very, very distressed and disturbed to the
11 fact that the folks that may be on this board
12 or the organizations that represent this action
13 did not afford the State of New Hampshire the
14 opportunity to partake in this process.

15 And for the record, I want that
16 definitely mentioned for the record. Because
17 another word that comes to my mind is
18 "liability." And I don't know how that works.
19 I'm not a lawyer. But, you know, that's a blg
20 thing. I have two young children, and my kids
21 like to go in the ocean and pick up shells and
22 play at Prescott Park and etc., etc. But, you
23 know, it's a concern of people. And I hope and

1 pray again that the Navy does do what's right
2 and that the professionals involved in your EPA
3 does what's right.

4 I don't honestly think the DEP from the
5 State of Maine knows what is right, to be
6 perfectly honest with you, no more than the
7 revenue service of the State of Maine knows
8 what's right. I don't trust the Department of
9 Environmental Protection from the State of
10 Maine no more than I trust the bureaucrats from
11 the local areas in the State of Maine, nor the
12 State of Maine itself. If they don't blink an
13 eye while they're stealing my money, they sure
14 are not going to blink an eye while they're
15 trying to hoodwink New Hampshire's southern
16 property concerning toxins.

17 Thank you very much.

18 DAVID SLANTS: My name is Dave Slants
19 and I'm a resident of Portsmouth, and I'd like
20 to just relay a story.

21 One time I was down at Pierce Island one
22 summer day, letting my dog swim off in the
23 water, and somebody came up to me and said,

1 "How can you do that to your dog? How can you
2 let your dog" -- as though I was being guilty
3 of some immense cruelty by letting my dog cool
4 off in the water out at Pierce Island, because
5 of what's -- not what's at the Navy yard. It's
6 what's unknown that's buried there, I think, is
7 the biggest problem. And I think that -- I'm
8 not a scientist. I'm just a -- what the plan
9 to cap it over, to cover it, seems
10 counter-intuitive. That's exactly what it's
11 doing, covering over the problem. It isn't --
12 it isn't getting to -- if there are barrels
13 down there full of stuff that are going to
14 eventually rust through, or batteries that are
15 going to leak through and all the stuff, the
16 tidal waters -- just capping it isn't going to
17 stop it from leaking out the sides. It
18 doesn't -- or out the bottom. Capping it seems
19 to be causing more of a problem by giving a
20 false sense of security, and making the --
21 what's eventually going to have to be done more
22 difficult.

23 I would rather see the money that's

1 spent building that -- or doing that and
2 monitoring that, cleaning up, even if it's only
3 able to clean up a quarter of it, at least
4 getting down there and figuring out what's
5 there, because nobody really knows. Get rid
6 of -- you know, spend that same money doing the
7 right thing to a smaller section, and then wait
8 for more money to move on to another section.
9 But covering it over is exactly, I think, what
10 this solution does. It covers it over. It
11 doesn't solve it at all.

12 That's my opinion.

13 PHILIP McDONOUGH: Hello. For the
14 record, my name is Philip McDonough. I
15 currently live in Rye, New Hampshire.

16 I grew up on the banks of the Piscataqua
17 River, right across the river from Clark's
18 Cove. I saw the causeway being built between
19 Clark's Island and the shipyard. Since 1948 we
20 lived on the banks of the Piscataqua in New
21 Castle. And I'm here today to say that I'm
22 very disappointed in the process's result, not
23 necessarily the process, because I had a lot of

1 lot of hope -- I had much hope in that this
2 process that was going on here with the
3 because of the process of the civilian
4 oversight, of the Navy's plans, EPA's
5 involvement, the Maine DEP's involvement, and I
6 will say I'm very disappointed that the State
7 of New Hampshire wasn't involved -- didn't deem
8 to become involved, as I understand it -- and
9 that an environmental group, the Seacoast
10 Anti-Pollution League, of which I am a former
11 president, was invited to participate and
12 monitor for the civilian population what was
13 going on.

14 It's clear from the process right now
15 that alternative -- well, it's clear from the
16 process that Alternative 5 would be the
17 comprehensive solution. You've heard that
18 before tonight. And this process seemed to
19 promise that the government, the federal
20 government would take a responsible and a
21 leadership role in cleaning up Superfund sites,
22 plural, okay, its own sites.

23 Instead, the Navy appears to have taken

1 the position that the government itself would
2 not allow private industry to take in a similar
3 situation. I can't believe that they would
4 allow a private contractor, a responsible --
5 deemed responsible for a site to separate off
6 and put out into the future with no -- no time
7 line, no monitoring proposals.

8 And the purpose of my comments is to
9 urge the organizations represented here -- not
10 EPA, Navy, DEP -- to reverse what I call the
11 behind-the-closed-doors decision represented in
12 this document right here, okay, OU3, which used
13 to be -- which used to have the entire island,
14 okay, that site, and now it's just separating
15 one of the most crucial parts of
16 it, represented in this document and to take a
17 responsible and comprehensive conclusion. It's
18 not too late, as you have been urged here.
19 It's imperative for public confidence and
20 safety to make the right decisions and not just
21 the economic ones. If the federal government
22 is going to take a role, a leadership role in
23 cleaning up the Superfund sites, they need to

1 do it right, not on a half-assed basis, which
2 is what I see this as being.

3 Thank you.

4 DANIEL GAIRE: Hi. My name is Dan
5 Gaire, Eliot resident. And there's been a lot
6 of words tonight. I'm sure everyone is tired
7 and emotionally drained, and I just want to
8 offer up three simple words. Hopefully you'll
9 take these with you and think about them on the
10 way home, think about them when you get up in
11 the morning and as you go forward with this
12 process. That's "Do The Right Thing."

13 Thank you.

14 MR. PLAISTED: Are there any further
15 comments?

16 (No response.)

17 MR. PLAISTED: If not, then I declare
18 this public hearing closed.

19 MR. GAIRE: Four words.

20 MR. PLAISTED: Thank you very much, and
21 have a safe ride home.

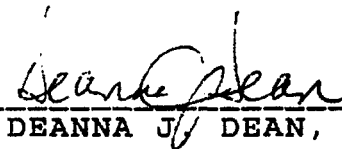
22 (Proceedings concluded at 8:30 p.m.)

23

C E R T I F I C A T E

I, DEANNA DEAN, a Notary Public and
Certified Shorthand Reporter of the State of New
Hampshire, do hereby certify that the foregoing is a
true and accurate transcript of my stenographic notes
of the proceedings on the date hereinbefore set
forth.

I do further certify that I am neither
attorney nor counsel for, nor related to nor employed
by any of the parties to the action in which this
deposition was taken, and further that I am not a
relative or employee of any attorney or counsel
employed in this case, nor am I financially
interested in this action.



DEANNA J. DEAN, CSR, CRR.

APPENDIX B.2
WRITTEN COMMENTS

5' Kunning Ridge' Cove
Manchester, MA 01744
Jan. 31, 2001

Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

Dear Mr. Robinson:

I am writing on behalf of myself and other concerned residents of Manchester, MA. Manchester is a seaside city as is Portsmouth and a number of us follow environmental problems up and down the coast. We urge you to take action on the Jamaica Island Landfill Site by implementing the combined cap-and-barrier option so that harmful chemicals will not wash into the water.

If government agencies and the military and naval forces do not uphold a high standard of accountability, how can government ask industries not to pollute? We cannot wait five years to address the issue of tidal migration. We want ~~wait~~ action now before contamination worsens.

I have known many veterans of World War II, Mr. Robinson, who gave their lives and served their country to preserve a palatable way of life back home. Let us honor their memories by doing the HONORABLE DEED.

Sincerely yours,
Marjette B. Delehant.



Coveside

Five Islands Maine 0348
(207) 371-2807



What the Tide takes
out: It also washes
Back - ? ? ?
Can the Navy Hold
Back The Tide ?
? ? ?



H. Robinson
Pul. Affair Office
Portsmouth Naval
Shipyard.
Portsmouth N.H.
03804-5000

Dear Sir: This is being written
to alert you that merely
capping the Jamaica Island
landfill Superfund site is not
an acceptable solution.

If the toxic wastes are not to
be removed altogether, the
least that should be done
is to create a barrier around
it to prevent tidal intrusion.

Toxic output has gone on
for too long already. It's
time to remember that
we need to clean up after
ourselves so that we can
leave a cleaner environment
for our grandchildren.

Lorraine B. Morong
Madbury

Jeanne Ott Saunders
Hondal Common - 15 Ellis Rd.
Weston, Massachusetts 02453

Mr. A. Robinson
Public Affairs Office
Naval Shipyard
Portsmouth N.H.
03804-5000

Sir: It is true that option 6
in re the Tamaqua Is. landfill is un-
fair since it simply transports the problem.
However Option five must be done
completely: ie a Barrier is most
essential -

What goes out with the tide
comes Back

What the tide washes out, the tide
brings back - to some one's shore

Time and tide do NOT wait -

Let us not be cheated by
a government that does have
a surplus.

Jeanne Saunders ^{member}
Isles of Shoals Assoc

Lepage Environmental Services, Inc.

P. O. Box 1195 ! Auburn, Maine 04211-1195 ! 207-777-1049 ! Fax 207-777-1370

March 1, 2001

Mr. Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, New Hampshire 03804-5000

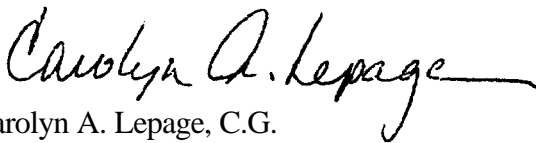
Subject: January 2001 *Operable Unit 3 Proposed Remedial Action Plan*

Dear Mr. Robinson:

The Seacoast Anti-Pollution League (SAPL) will not be submitting additional written comments on the January 2001 *Operable Unit 3 Proposed Remedial Action Plan* (PRAP) with the exception of the following: SAPL members and others had expressed concerns at the November 30, 2000, Restoration Advisory Board meeting (and in SAPL's subsequent written comments) that the November 2000 Draft PRAP was too long and complex for the general public to readily understand. SAPL appreciates the Navy responding to those concerns by submitting a far more readable final document for the public to scrutinize during the public comment period.

If you have any questions regarding the comment above, please give me a call at 207-777-1049.

Sincerely,



Carolyn A. Lepage, C.G.
President

cc: Johanna Lyons, SAPL
Iver McLeod, Department of Environmental Protection
Meghan Cassidy, Environmental Protection Agency
Marty Raymond, Portsmouth Naval Shipyard



CLEAN WATER ACTION

March 1, 2001

Mr. Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

Dear Mr. Robinson,

On behalf of Clean Water Action and our approximately 400 members in Seacoast region of New Hampshire and Southern Maine, I would like to offer the following comments on the Navy's Proposed Remedial Action Plan for Operable Unit 3 at the Portsmouth Naval Shipyard.

As others have pointed out, we are very concerned that, in the process of getting from the Draft Feasibility Study to the Final Proposed Plan, the potential alternatives for remediation have been whittled down to the point that the public has essentially been presented with no choice in the matter: Clearly, a decision had to be made on a preferred alternative, but the previous and rather arbitrary decision to separate "source control" from "management of migration" and designate a new operable unit to shunt aside the migration issue rendered this decision-making process too narrowly defined.

We understand that capping of the Jamaica Island Landfill is necessary, but it should be seen as bare minimum, prerequisite measure to address remediation of the site, as part of a larger, more comprehensive plan to deal with the threats this site poses to the surrounding environment and the community.

The designation of OU 6 is essentially a bureaucratic fiction - bearing little resemblance to the geographical or especially the ecological reality of the site. One can't deal with each OU in isolation -- one unit clearly affects the other. If OU4 is significantly contaminated from previous contaminant migration, then any additional contamination should be best avoided. And the suggestion by the Navy that it could take many more years to determine whether the contaminant migration issue needs further addressing is simply unacceptable. There are too many unanswered questions that this approach poses, answers that the public deserves to be given as soon as possible. This site has been investigated under various programs for almost two decades at this point, and we shouldn't have to wait another decade for a comprehensive solution to its impacts on the local environment.

Everyone involved in the process admits to uncertainties with regard to existing seep contaminant impacts. Yet evidently among government agencies, only ME DEP thinks those

NATIONAL OFFICE

4455 Connecticut Avenue Washington, DC 20008-2328 (202) 895-0420

NEW HAMPSHIRE OFFICE

163 Court Street Portsmouth, NH 03801 Phone (603) 430-9565 Fax (603) 430-9708

impacts may be important enough to warrant further investigation at this time and possibly further remedial action to address those impacts. Unfortunately, there are other uncertainties that exist with regard to contaminant migration from this site that have also not been addressed as yet.

One of these uncertainties concerns the extent, impact and potential for mobilization of dioxin contamination in OU3. Dioxin and furan congeners were only recently identified in some portions of the landfill, as well as in offshore sediments and biota. There has been no analysis as yet of whether dioxin has migrated from the site in the past, is present in current seep water or has the potential to migrate in the future. This situation is especially troubling since US EPA recently issued a reassessment of dioxin that has increased its already significant risk factor by 10 to 100 times, and a subsequent determination makes it a known human carcinogen. In addition, researchers acknowledge that there are significant uncertainties in its non-carcinogenic properties, especially in acting as an endocrine disrupter. For all these reasons, the risk assessment done for OU3 is clearly already out of date, and more needs to be done to assess these impacts.

Another source of significant uncertainty in managing migration of contaminants from OU3 is, ironically, the containty that sea level is rising, and the great likelihood that it will rise at a greater rate in future decades due to global warming. This process, coupled with the likelihood of more severe weather, storm surges and attendant coastal flooding, raises the distinct possibility that areas of the landfill that have not been previously saturated with sea water or otherwise disturbed may be so disturbed in the future. Clearly, this eventuality renders existing estimates of possible contaminant migration uncertain at best. Despite my previous attempts to draw attention to this fact with regard to this site, the government and its contractor appear unable to take it into account

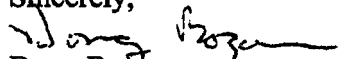
These and other uncertainties in dealing with this site should lead to precaution, not inaction with regard to migration. The burden of proof should be on the Navy to demonstrate that seeps from the landfill don't represent a threat, given all these uncertainties and potential for future releases.

Therefore, we concur with Seacoast Anti-Pollution League that the Navy's go-ahead for capping the landfill be made contingent on producing a contingency action plan that retains the tidal/groundwater cut-off barrier to be pursued immediately, and that further testing of seep water for contaminants, including dioxin, be done expeditiously. We would add that the impact of sea level rise/climate change should be further investigated or otherwise taken into account in determining a comprehensive remediation for OU3.

Clearly, public opinion, as represented at the recent public hearing and elsewhere, is not satisfied with the Navy's proposed plan in the context of dealing comprehensively with OU3. Lack of public support for the Navy's chosen alternative, combined with the uncertainties raised above and elsewhere, should dictate a more precautionary approach in completing the task of remediating this site in a timely and comprehensive manner.

We hope that you will take these thoughts and recommendations into consideration in your decision-making over the proposed plan.

Sincerely,


Doug Bogen

NH/ME Program Director
Clean Water Action

February 25, 2001

Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard

Re. PNSY Jamaica Island Landfill Cleanup

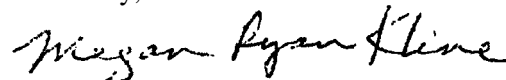
Given that the current conditions at the Jamaica Island Landfill include influx from both rainwater and the half million gallons seawater which flood the site each tidal cycle, the removal of this landfill would appear to be the only viable long-term solution. Certainly, any remedial work must address all migration of contaminants from this site.

The Maine State Planning Office in conjunction with the National Oceanic and Atmospheric Administration (NOAA), projects that the Mean High Water will rise during this century. NOAA also describes the Gulf of Maine to be an ecosystem with its own circulation pattern, similar to that of a lake. Prompt and appropriate work at Jamaica Island would help protect the Gulf of Maine marine resources by removing one major source of toxic effluent.

Act for the next century. Please do not skimp on this endeavor.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script that reads "Megan Ryan Kline".

Megan Ryan Kline
6 Juniper Point Road
Kittery, Maine 03904

February 28, 2001

Mr. Alan Robinson
Portsmouth Naval Shipyard
Public Affairs
Portsmouth, New Hampshire 03804-5000

Re: Operable Unit 3 - Proposed Remedial Action Plan
Portsmouth Naval Shipyard
Kittery, Maine

Dear Mr. Robinson,

As a member of the Restoration Advisory Board (RAB) and a Kittery resident, I offer the following comments during the Public Comment Period for the document titled Operable Unit 3 - Proposed Remedial Action Plan (PRAP), dated January 2001.

1. I am concerned about both the substance of the PRAP and the manner in which it is finalized. While a multitude of studies have been performed at the site since the 1980's, a late hour decision was made by the Navy, USEPA and MDEP to delay addressing the migration of contaminated groundwater that flows from beneath the Jamaica Island Landfill (JILF) into the Piscataqua River as part of Operable Unit 3. I commend MDEP for insisting that the seeps be addressed, however, by creating the so-called Operable Unit 6 a decision about off-site migration has been put off for up to five years. This delay does not benefit the public or the environment and is unacceptable. Seacoast area residents have witnessed the timely cleanup efforts at the former Pease Air Force Base and see no reason why the PSNY cleanup should be prolonged. At its current pace, the cleanup at the PSNY will take three decades or more. Every effort should be made to accelerate the cleanup process at all the PSNY Operations Units.
2. The Summary of Remedial Alternatives on page 11 of the PRAP states that "Alternative 5, developed in the OU3 FS, is not a *source control* remedy, and therefore, is not included in this Proposed Plan." This statement is entirely misleading to the public. First, *Source control* is not defined in the Summary of Technical Terms on page 14. Second, Alternative 5 includes a cover, institutional controls, erosion control measures and monitoring which are the essence of Alternatives 3 and 4. Because Alternative 5 includes additional measures (a barrier wall), this should not disqualify it from being a *source control* remedy for inclusion in the PRAP. Alternative 1: No Action is not a *source control* remedy, yet it is included in the PRAP. Alternative 5 was included in the draft of the PRAP presented to the RAB, yet it was dropped from the final PRAP with no discussion of how this would benefit the public's understanding of the issues. Alternative 5 should not have been deleted from the *Summary of Remedial Alternatives*, *Evaluation of Alternatives*, and the *Summary of Comparative Analysis of Alternatives*. Deleting important information at the 11th hour is not the way to gain the public's trust.
3. A strong potential exists for future releases from undiscovered steel drums within JILF. Test pitting in the spring of 2000 provided ample evidence that previously unknown materials are deposited in JILF within containers made of corrosive material. Steel containers that are located above the water table and are currently in sound condition will eventually perforate.

The MTADS survey and limited test pitting program did not prove that additional drums are not present elsewhere in JILF. The MTADS study did not include the entire landfill surface and there was difficulty in correlating the magnetic readings and drum locations. The test program was limited to 25 excavations. It is also notable that the Navy has not evaluated the impacts of rising tide levels relative to the deposition of waste in JILF. The Feasibility Study for OU3 (and the appropriate documents for OU4 and OU6) should be updated to evaluate the time of travel for contaminants from a future release and an appropriate monitoring interval selected to allow a response to such a release. Real time monitoring should be considered to alert responsible parties of elevated contaminate levels.

4. Not reducing the tidal influx prior to installation of a new low permeability cover presents a potential problem. The tidal influx is estimated at over 500,000 gallons per day. As the tide ebbs, a volume of fresh air equal to the tidal flux will enter the landfill through the vents in the proposed cover. Typically, large volumes of fresh air are not drawn into a landfill because there is positive gas pressure from within the landfill or there is no mechanism for drawing fresh air in. However, we are told that the JILF contains minimal organic material and that landfill gas production is probably very low (if any). Therefore, there is no strong gas pressure from within the landfill to prevent fresh air from entering. The tidal flux will act as a "lung" drawing in fresh air.

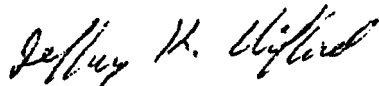
Fresh air entering, exiting and traveling within the JILF will likely flow in different pathways than it does now. The introduction of oxygen to areas within the landfill that were previously anoxic can accelerate the decomposition of ferrous metal such as steel drums, filings and shavings. Also, if fine materials such as metal filings were to decompose rapidly, temperatures could rise to dangerous levels within the JILF. The corrosion problem is a particular concern in the area of the landfill just above the normal groundwater level where moisture and oxygen will be present after the cover is installed.

5. The RAB members have been told that "public acceptance" is a part of the CERCLA process in developing a Record of Decision (ROD) for each Operational Unit. Based on the concerns expressed at the February 22, 2001 Public Hearing, the public is not in agreement with the PRAP for OU3. How will the public's concerns be addressed under the CERCLA process?

In closing, I feel the installation of a cover at JILF should proceed as soon as possible. But, equally important is that monitoring of the seeps and an thorough evaluation of containment methods to control groundwater migration from JILF should proceed immediately.

Please call 603-433-2335 if you have any questions regarding these comments.

Very truly yours,



Jeffrey K. Clifford, P.E.

JKC/jkc/RAB.PRAP.res.ltr.doc

Fax copy to: Leo Guy, Kittery Town Council
 Peter Britz, City of Portsmouth
 Carolyn Lepage, TAG Advisor

pat rettallata/consulting

FAX

FORWARDED TO
MATTY

To: Alan Robinson..... Pages: 2.....
Public Affairs Office.....
Portsmouth Naval Shipyard...
RE: OUS PRAP.....

Memo:

Dear Alan,

Please submit the following written comments

for consideration before making a decision about the.....

Proposed Remedial Action Plan for Operable Unit 3.....

Thanks, Pat.....

P.O. Box 1652 / Portsmouth / NH 03802
207.439.0907 / rettalia@nh.ultranet.com

That the Portsmouth Naval Shipyard, at the last minute, redefined the extent of Operable Unit 3 (OU3), creating a new Operable Unit 6 and removing remedial action Alternative 5 from consideration as a remedy for OU3 without input from the Restoration Advisory Board (RAB), strains the public trust.

I am concerned that remediation of groundwater and tidal migration carrying contaminants out of the Jamaica Island Land Fill (JILF) and into our river will be delayed by possibly another 5-8 years. How much more risk do we take on waiting 5-8 years?

Chemicals of Concern (COCs) in the water flow are still in discovery. Dioxins have only recently been added to the know contaminant list, so have not been considered in the environmental risk assessments already done. The possibility of unknown containers degrading and releasing new contaminants exists. New areas of the JILF could be exposed to tidal migration if, as expected by NOAA, sea levels in coming years rise above historical norms assumed in previous risk assessments.

As a long term resident here I am not comfortable postponing addressing remediation for two thirds of the water flow from the JILF. I would like to see a remedy that included containment of ground and tidal water migration, as well as a cap.

Sincerely,

Pat Rettalia

ELAINE M. PEVERLY (Mrs.A.W.)
85 Eliot Road, Kittery, Maine 03904

February 26, 2001

Mr. Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

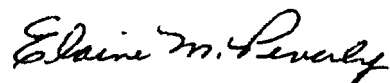
Dear Sir:

It is inconceivable that a publicly funded, respected organization such as the United States Navy would continue to ignore an ecologically sensitive area, which could affect the health of thousands of people over the coming years. While it should have been properly taken care of many years ago, it does not absolve this agency from taking immediate and ***all-encompassing*** steps to clean up and restore the Jamaica Island Landfill to a *pristine* condition, which, if necessary, could be used for productive pursuits, without endangering any more lives.

Installation of a hazardous waste cover over this still toxic area, or of a barrier of any kind, are not reasonable, or humane answers to the alleviation of its former use. **The ONLY REASONABLE and ECOLOGICALLY SOUND SOLUTION is to remove ALL material from this sensitive area.** Capping it, or installing any kind of barrier, will only send the leachate materials deeper, providing future opportunity to leach the toxic residue into surrounding land and water areas - making it possible to affect the lives of area residents for many years to come.

As residents of this town, as taxpayers, and as United States Citizens, who have continually supported the United States Navy, we feel it is ***incumbent on this agency***, and the **ONLY RIGHT THING TO DO**, *under any and all circumstances*, to remove the contaminated material from Jamaica Island **IMMEDIATELY**. Too much time, money, and energy has already been spent in hearings and unacceptable proposals. It is time to take full responsibility for its previous use, and restore this important property to its original condition.

Sincerely,

A handwritten signature in cursive script that reads "Elaine M. Peverly".

Mrs. Arthur Peverly

Portsmouth Naval Shipyard
Proposed Remedial Action Plan for OU3
Public Hearing
Courtyard Marriott
Portsmouth, NH

February 22, 2001

The following testimony is submitted by
Susan Emery, 5 Mitchell School Lane, Kittery Point, Maine:

"I favor a plan which includes not only a cap but also a barrier around the landfill. It is unacceptable to me to allow toxins to leach out through groundwater and daily tidal migration for another 5 to 10 years as this represents continued great risk to the health of the citizens in the area and the estuary."

Feb. 20, 2001

Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, New Hampshire 03804-5000

Please give to the U.S. Navy this good idea and plea to shut down the Portsmouth Naval Shipyard and to convert it into a University of New Hampshire or University of Maine and to pay restitution to us citizens who live surrounding the toxic areas of the shipyard and who need payment for the exposure to the bad elements from the yard all these years.

Complete removal of all landfill and waste and traces of the yard (minus a museum) should begin now out of respect of humankind.

Thank you,
Sue Johnson
13 Cromwell Street
Kittery, Maine 03904-1125

Johnson

In all sincerity, my,
— this suggestion is
ultimately the best for
our town + nation.
Thank you—

Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, New Hampshire 03904-5000

Please give to the U.S. Navy this good idea and plea to shut down the Portsmouth Naval Shipyard and to convert it into a University of New Hampshire or University of Maine and to pay restitution to us citizens who live surrounding the toxic areas of the shipyard and who need payment for the exposure to the bad elements from the yard all these years.

Complete removal of all landfill and waste and traces of the yard (minus a museum) should begin now out of respect of humankind.

**Thank you,
Sue Johnson
13 Cromwell Street
Kittery, Maine 03904-1125**



CITY OF PORTSMOUTH

Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801
(603) 431-2000 or 2006 ext. 200
Fax (603) 427-1526

Evelyn Sirrell
Mayor

February 23, 2001

Mr. Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, NH 03804

Dear Mr. Robinson:

In response to the Navy's Proposed Remedial Action Plan for Operable Unit (OU) 3 at the Portsmouth Naval Shipyard the City of Portsmouth technical staff have prepared several recommendations. We are strongly supportive of these comments which follow below.

The City of Portsmouth does not believe any alternatives described in the Navy's Proposed Remedial Action Plan go far enough to protect the public interest given the uncertainties which remain as to the level of contamination the JILF poses to the public in both Maine and New Hampshire.

The City does not support the Navy's decision to separate "source control" from "management of migration" from OU3 when the impacts to the offshore and nearshore environment via seeps from the JILF are not clearly understood. In fact, the Navy has stated that there are Chemicals of Concern in the brackish/saline groundwater identified in the OU3 feasibility study. Additionally, the Navy has stated that not only will it separate "management of migration" into OU6 but that it will not study the potential impacts until 2005. This decision was made with inadequately supportive sampling or monitoring data.

The City of Portsmouth recommends that the Navy proceed with both OU3 and OU6 concurrently. Perhaps the Navy can demonstrate a valid administrative reason to separate these two units, but we believe it has not demonstrated the need to delay study on OU6.

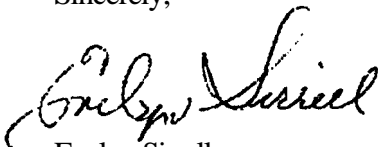
Our concern is that there is not containment at the JILF. The daily tidal action and the current groundwater seepage will continue to flush contaminants from the JILF and introduce them into the intertidal nearshore and offshore environments. Since there is an incomplete accounting of the contaminants at the JILF and uncertainty as to the condition and degree of containment of these contaminants continuous monitoring is essential as the situation could change at any time with a potential new hazardous releases occurring at any time for a variety of reasons.

February 23, 2001

The Remedial alternatives forwarded by the Navy are in our estimate incomplete. We do not understand why alternative 5 (which considered a cover with composite liner and enhance barrier layer, cut-off barriers, institutional controls, erosion control and monitoring) was removed from discussion. Additionally, why was there no consideration of complete removal of all or partial removal of landfill materials. A discussion of this alternative would have provided useful information to the affected public.

The City of Portsmouth requests that the Navy implement a testing protocol for the seeps from the landfill as well as intertidal monitoring to insure that at a minimum the public can be notified if there is any danger of contamination though eating fish or shell fish from the waters around the JILF. The City supports Alternative 5 which is not presented in the final PRAP but was presented in the November 2000 PRAP. We believe the addition of a cut-off barrier is essential at this site due to the daily ingress and egress of tidal waters on the landfill and to protect the landfill from the impact of severe storms events or impacts do to potential sea level rise.

Sincerely,

A handwritten signature in black ink, appearing to read "Evelyn Sirrell". The signature is fluid and cursive, with the first name "Evelyn" written in a larger, more prominent script than the last name "Sirrell".

Evelyn Sirrell
Mayor

cc: City Council
John Bohenko, City Manager

Testimony to the Public Hearing on the
PORTSMOUTH NAVAL SHIPYARD PROPOSED REMEDIAL ACTION PLAN FOR OU3
Courtyard Marriott, Portsmouth, NH
February 22, 2001

My name is Susan Kress Hamilton. I would like to submit the following testimony as a Kittery citizen and homeowner, and as a business owner in Portsmouth since 1978.

I have educated myself about the hazardous waste clean-up process at the Portsmouth Naval Shipyard since it was designated a Superfund site by the EPA in 1994. I have recently gotten more involved in the process by attending the November 30, 2001 Restoration Advisory Board meeting and the Navy's Informational Open House on February 1.

I take strong objection to the Navy's Proposed Remedial Action Plan for the Jamaica Island Landfill both in the process in which it was created and in its substance. I strongly favor an action plan that would include a barrier to address tidal migration of contaminants from the landfill into the Piscataqua River.

My primary objections to the plan before us are as follows:

1. The last minute decision by the Navy to separate off the intertidal zone as OU6, thus eliminating Alternative 5 of the draft plan and avoiding the migration of contaminated groundwater as an issue is a flagrant undermining of the process and a great blow to public confidence. As late as the November 30 RAB meeting, Alternative 5 was still being promoted as viable to the public and was eliminated after that meeting without the knowledge of the Restoration Advisory Board and its citizen members.
2. There are no adequate choices provided by this plan. In fact, the Navy's Alternative 3 can not be called an alternative at all, as it is the only choice. Early on in the process, the Maine DEP made it clear to the Navy that it would not accept Alternatives 1 and 2 under any circumstance, effectively eliminating them as options; and Alternatives 3 and 4 are really only variations on a cap solution. The public is being misled that there are alternatives in this plan.
3. The proposed plan does not even look at the contact of waste materials at the landfill with the tides that flow in and out every day. Even the Navy's own study says that 2/3 of the water exiting through the hazardous waste landfill comes from groundwater flow and tidal influx, and only 1/3 from precipitation. The cap proposal will only inhibit vertical migration of water from the surface down and will not prevent lateral migration into and out of the site, allowing contaminants from the waste to migrate off the site into the Piscataqua River.
4. There should be immediate testing for dioxin done now at the landfill seeps as it is relevant to the action plan before us. Dioxin has been detected offshore in sediment, mussels and juvenile lobsters as recently as January 2001 in the Navy's Interim Offshore Monitoring study. The first time


the Navy tested for dioxin was in 1998 at Site 29. Because the estuarine ecological risk assessment, the offshore human health risk assessment, the groundwater monitoring at the Jamaica Island Landfill and the 1996-97 seep/sediment sampling were all conducted prior to 1998, *without* dioxin testing, there is a great potential that all these prior assessments are too low. Dioxin is a potent carcinogen in low concentrations and does not tend to breakdown. As recently as January 19, the National Institute of Health changed its listing of dioxin from the "reasonably anticipated" category to a "known human carcinogen."

5. It is incredulous that the Navy, the polluter, has taken ten years or more of study to come up with the obvious and questionable solution of a cap, a solution that has been used at many other Superfund sites and with already established technology. Repeated questions to Fred Evans, Navy Remedial Project Manager, for the specific dollar amount spent to date on the Jamaica Island Landfill have not been answered. We do know that total funding to date for all the Shipyard Superfund sites is over \$23 million!!! No wonder the public is frustrated and angry at the inadequacy of the solution and the unanswered questions left with us in this process. The pollution concerns involved in the shoreline area now called OU6 should have been addressed all along and now the Navy wants us to wait another 5 years or more for them to study a possible action plan.

This Record of Decision by the Navy and the EPA is of great importance to our community. We have been patient and tolerant with the process for many years. The Navy has been a large seacoast employer in the past but has also been the creator of hazardous waste and pollution in a fragile and unique estuary. It is time for the Navy to take real responsibility and action for its Superfund sites. The Jamaica Island Landfill is only one of many superfund sites at the facility to be dealt with. By choosing to delay, avoid and disregard any real solution for this one site, the Navy has put our community on alert that we can not trust them to follow through in the future.

The EPA has so far gone along with the Navy's proposals for the Jamaica Island Landfill. They now stand alone as the only signatory on this decision in a position to call for a real remedial action plan from the polluter. There is still time for the EPA to come forth to protect human health and the health of our ecosystem by demanding the Navy place a barrier as well as a cap at the Jamaica Island Landfill.

Sincerely,



Susan Kress Hamilton
Kittery Point, Maine 03905

The Seacoast Anti-Pollution League

Founded 1969

SAPL

P.O. BOX 1136

PORTSMOUTH, NH 03802

603-431-5089

e-mail: sapl99@aol.com

TO: The U.S. Navy, Portsmouth Naval Shipyard Superfund Remedial Action Team

FROM: The Seacoast Anti-Pollution League

RE: Testimony regarding the Portsmouth Naval Shipyard's remedial action plan for the Jamaica Island Landfill

DATE: February 22, 2001

The Seacoast Anti-Pollution League offers these comments in response to the proposed remedial action plan for the Jamaica Island landfill, also referred to as Operable Unit 3, or OU3.

SAPL is a community grassroots organization whose mission is to protect public health and safety and monitor threats to wildlife and the ecosystem in the seacoast regions of New Hampshire, southern Maine, and northern Massachusetts. After careful and thorough review of the data supporting the Navy's proposed plan, our view is that the cap alone is an unfit option, that a barrier is necessary to address tidal migration of toxins from the landfill, that serious unanswered questions about threats to human health and the ecosystem remain, and that the Navy needs to take immediate steps to put adequate protections in place. However, before we go into the details supporting these views, we'd like first to comment on process.

To fulfill our mission, we have participated on the Restoration Advisory Board since 1995. That board has provided a forum in which we could express community perspectives on environmental conditions at the shipyard. However, it has not met since November 30, 2000. As a result, a vital link in communications between the community and the shipyard was missing while some crucial decisions were being made about the Jamaica Island landfill.

Ironically, the Navy's feasibility study--describing five alternatives being considered for the Jamaica Island cleanup--was also made available to the public in November 2000. Any citizens who read that study would have been unaware that major decisions were already being made, which would render some of the alternatives described in that document irrelevant. That's because it was only after that document was released that the Navy decided to separate out the intertidal zone adjacent to Operable Unit 3, into a new Operable Unit 6, and to remove remedial action alternative #5 from any further current

consideration. Those decisions raised a whole new set of unanswered questions, for which the community deserves some answers.

For example, the following questions about the new Operable Unit 6 are of great concern to us—and impact heavily on our response to the OU3 plan:

- # What is the timeline for study and remediation of OU6?
- # How does the new OU6 relate to Operable Units 3 and 4?
- # How will the OU3 remedy currently proposed by the Navy affect this unit?
- # What funding would be available to deal with this new unit?
- # What are the risks to human health from the seeps located in this unit?
- # What are the risks to the estuary environment from delaying remedial actions for this unit?

However, quite apart from specific concerns of that nature, SAPL, the residents it represents through its membership, and other residents who've voiced concerns in other forums have general apprehensions about the proposed remedial action plan before our community and about the process whereby it is being implemented.

First among these concerns involves a lack of adequate options. In regard to providing remedial-action choices for the public to respond to, the Navy has failed the local community. As already noted, the most comprehensive choice, alternative #5, has been removed from consideration. That alternative is the only one that deals with the major concern of the community: the control of toxic pollutants into the estuary. Alternatives #1 and #2 are essentially “do nothing” choices. The State of Maine would not agree to such choices, in any event, so they do not represent genuine options. Alternatives #3 and #4 are merely variations on the same theme--capping the top of the landfill. Those technical variations could just as well have been left to the design phase.

Basically, the community is being given one choice at this time: a landfill cap on the center of the Jamaica Island site. Additional concerns about this site's impact on the estuary are eschewed by a deft move--the redefinition of the site's shoreline as another operable unit, which is slated to be studied for many more years before any additional remedial actions, if any, are finally taken.

We are also concerned that the community's voice is not being adequately heard in the process. The shipyard is, after all, located in New England. In our town meetings and city council hearings, we expect as a matter of right to discuss all options for solving a particular problem. We also expect all governmental units to speak to us and to hear our voices in return. In that regard, we hope that the U.S. Navy and the Environmental Protection Agency fully understand the community's concerns about the Navy's proposal.

I'd now like to summarize the many concerns you've heard SAPL and others raise at public meetings regarding your proposed remedial action plan for OU3.

First, let me explain why we feel the cap alone is an unfit option. The Jamaica Island landfill was constructed in a mudflat, and so is among those unique Superfund sites that is subject to both groundwater flows and saltwater tidal flushings. In other words, tides flush water into and out of this Superfund site every day. Viewing this site from a three-dimensional perspective, those combined hydrological flows are crucial variables in regard to human risks and the health of the estuary. Assuming the cap is properly designed, constructed, and maintained, it will prevent precipitation from infiltrating the site; and it will divert surface water drainage within the boundaries of the cap. However, only an estimated one-third of the water currently leaching the landfill comes from precipitation. The remaining two-thirds comes from tidal migration--something the cap does not address at all. While the cap would inhibit the vertical migration of water from the surface down into the ground, the cap does not prevent the lateral Migration of groundwater into and out of the landfill.

That said, we feel the Navy must take immediate steps to address tidal migration and the construction of a barrier. After 10 years of study, the Navy has been unable to prove that a barrier is *not* needed, and its desire to take even more time to study the matter cannot be taken lightly. Where questions remain regarding the health and safety of people and ecosystems after prolonged study, the only responsible approach is a precautionary one. In this case, that means moving ahead on a barrier.

What are some of serious questions that remain? There are many and I will address just a few key examples—the first of which involves dioxin. The Navy only began dioxin testing in 1998, and did indeed find dioxin onshore at the landfill. However, even after finding it onshore, it never tested for dioxin in the seeps—which means that neither the Navy, regulatory agencies, nor the public knows whether this dangerous toxin is leaching out of the landfill. The Navy currently views this site as one of low risk to surrounding human communities. Dioxin is a known human carcinogen even at low levels, and it doesn't tend to break down or dilute in water. Finding dioxin in the seeps could alter the risk level of the site significantly. So there is the potential that all the risks calculated in prior assessments are too low.

Second, the Navy has failed to address sea level rise in designing an action plan to contain the toxins at this site. This is a serious oversight in designing a remediation plan for a site that is daily affected by tides. According to NOAA, other government research agencies, and much independent scientific research, our region is expected to endure sea level rise in the near future, as well as increased heavy weather events brought on by global warming. We refer here to events beyond the 100-year and 200-year storms that are factored into your design. This means that portions of the site that are above current sea level—and that contain serious toxins that have never been leached by tides—will soon be exposed to tidal flushing. Unless tidal migration is addressed immediately, it is reasonable to assume that the public and the surrounding estuary will be left completely unprotected from these highly probable circumstances.

Third, contaminants present in Sullivan Point have been shown to pose a significantly higher risk to human health and safety and the Navy has not been able to rule out that some of the contamination may come from the landfill. There exists the possibility that

fractures in bedrock allow the JILF groundwater to migrate in the direction of Sullivan Point.

Last, important questions about how and when monitoring will be implemented also remain unanswered. Long-term monitoring has been alluded to, but no contingency action plans are tied to that monitoring. The Navy makes frequent references to funding problems, which prevent them from pursuing comprehensive remedies in the near future. Those constant allusions to funding problems do not reassure the community that monitoring would ever result in any remedial actions.

Please be aware that residents of the area are concerned about human health risks at the site, but they are also highly concerned with the health of the estuary. Most of the quantitative analysis to date has focused solely on the human health risk at the immediate landfill site. However, there has been little data generated that speaks to overall health of the ecosystem, and to the those who want to know if it will ever be safe to fish and swim in the Piscataqua River—the community’s “front yard,” so to speak.

However, the Seacoast Anti-Pollution League does recognize that a landfill cap would be an integral part of any remedial action plan. We can support the Navy’s desire to proceed with the capping project, if certain provisions are met. In that regard, we insist upon two provisions. First, that the Navy promulgate a contingency action plan that retains the option of a tidal barrier, as described in their alternative #5 in the November 2000 feasibility study—and that that option be pursued immediately. Second, that the Navy begin immediate testing of the seep water and sediment in Operable Unit 6 to determine the discharge levels of toxics, including dioxin, from that part of the landfill. A timeline acceptable to the State of Maine and the community should be scheduled for these tests. Given these two provisions are met, we support the Navy’s current proposal for a landfill cap.

In conclusion, the Seacoast Anti-Pollution League believes that the Navy has arrived at a proposal that ignores tidal migration--the very reason for which it conducted such a careful study in the first place. To be sure, a landfill cap solves some of the problems, but--considered apart from a tidal barrier--it raises new questions and leaves many important concerns unresolved. Why has the Navy spent so long to come up with this one solution? Landfill caps have been implemented in many other superfund sites elsewhere. The technology is already well developed. Why then take ten years to study the problem? How many more years might it take to study the need for a barrier? And what risks might the public and the estuary face from toxic outflows during that time? These are all questions and concerns that SAPL and the community take seriously. We urge the Navy to devise precautionary solutions, rather than spending more time and money in the vain hope that those solutions might prove to be unnecessary.

Thank you.

The Seacoast Anti Pollution League

Feb. 4, 2001
189 Mill Rd
Hampton, NH 03842

Dear Mr. Robinson,

My husband and I attended the Informational Open House on Feb. 1, 2001. We listened carefully to the presentation and I would like to say that the number of abbreviations used to describe the functions and procedures certainly get in the way of clear communication. It was very difficult to get to the point with all of the technical acronyms. Any attempt to do away with them and just talk straight talk would improve two way communications a great deal.

Our feelings as we left were that Alternative 3 was not sufficient and that Alternative 4 with enhanced Barrier Layer and Erosion control and Monitoring was not addressing the problem of monitoring right now as the process starts. Also Monitoring for other substances in the water and mud or sediment would seem reasonable. Particularly dioxin and cbc's. A barrier to prevent the seepage of contaminants from under the surface water barrier would be a good idea. This area has up to 12 foot+ tides and a large number of boat wakes to deal with it should be given a serious consideration. This tidal area could be a place to monitor any possible contaminants. The risk to health and environmental damage seems to be monitored in a quiet fashion. The Portsmouth Power Squadron was thinking of requesting the use of the Island for a picnic. There was no awareness of any risk in the discussion at our meeting I can only feel that the public is unaware of any risk at all. After the meeting I spoke with a friend who worked at the yard and he spoke of a substantial amount of lead cable removed years ago. I am wondering if any cable was removed from the landfill at the same time, or if it remains from the past? Is it even an issue in this report?

We never heard of Alternative 5, as it was not on the agenda. Many people spoke of it and we are wondering what it was and why it was dropped.

Our boat is moored less than a quarter of a mile from the island and we spend many long days on it. Our exposure is not infrequent or monitored in any way as far as I could tell. I feel that the dioxin and cbc's are the most potent risk at this time. We feel that they should be monitored and that the barrier layer should be in place.

We could see that a lot of work has gone in to the report and into testing the site.

Thank you for your efforts.

Sincerely,

Barbara Nicholson
Daniel Nicholson

5 Blossom Lane
Exeter, NH 03833

Jan. 30, 2001

Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

We are writing to you to ask the Navy to construct a barrier around the Jamaica Island Superfund Site (in addition to capping it) in order to contain the toxins.

We are concerned about contamination of the estuary from the industrial wastes in the landfill. If you do not build the barrier soon, the tides and the groundwater could bring the toxins into the estuary. The estuary is a place where many ocean creatures feed and also is a nursery where many sea creatures are born. Lobsters, crabs, oysters, clams and fish all eat the creatures or filter in the phytoplankton and zooplankton. The food chain - including what people eat - would be contaminated.

We are sure the Navy is trying to keep costs down. If you do not build the barrier you will be affecting the fishing, the seacoast economy and more important the health of the people in the area. You will be increasing the costs to the seacoast which should concern you.

Please reconsider and think about living in a clean environment. Make sure we have a safe clean up.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Dr. and Mrs. Richard N. Kaplan".

Dr. and Mrs. Richard N. Kaplan
Phone 603-772-2119

Please provide comments and mail to the address indicated below:

Alternative 1. is the Best choice.

MR. ROBERT B PERKINS
192 WHIPPLE RD
KITTERY, ME 03904



Mr. Alan Robinson
Public Affairs Office
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000



January 26, 1988
Fary Gove
105 South St.
Portsmouth

Mr. Alan Robinson
Public Affairs Officer
Portsmouth Naval Shipyard
Portsmouth, NH 03804-5000

Dear Mr. Robinson,
When I look out my window I can see your shipyard across the river. When I cast my striped bass lure from the tree island I aim it at the big crane. I am close to the Navy Yard.

I strongly believe that, because of the nature of the pollutants that exist at the Jamaica Island Superfund Site, the Navy must cap and create a permanent barrier to the spread of their pollutants. Option #5 is the only level of containment that will make me feel comfortable eating fish from my river.

Please see to it that it is fully enacted.

Sincerely,
Fary Gove

53 Pocahontas Road
Kittery Point, Maine 03905
February 21, 2001

To: Alan Robinson, PAO, Navy Yard
Fr: Andrew Pearson
Re: Jamaica landfill

Alan,

We spoke on the phone some time ago and I asked for information about how many tests had been done for toxics around the edge of the landfill, but especially dioxin. What others have been tested for? Results? Plans for further testing, where, how, by whom?

Also, I remarked that the engineering company didn't really seem to be on top of the barrel search issue. You seemed to think their search was more thorough than they were able to report at the last meeting. So what exactly did they do? How much of the area did they test for, and what part did they dig up? And if they got overload readings for metal in some parts, why didn't they dig there also, just to be thorough?

Here's a copy of a personal letter I sent to the Kittery Town Council. I'm sending copies to the Maine environmental office, EPA and a few other places.

Regards,

A handwritten signature in black ink, appearing to read 'A. Pearson', with a long horizontal flourish extending to the right.

PS I had planned to be at the meeting tomorrow evening, but my son is in a basketball playoff game in Augusta. Seems lots of people interested in this issue won't be around. Hope you're not alone there.

February 7, 2001

To: Kittery Town Council Members

Fr: Andrew Pearson, Kittery

About: Navy meeting to describe Jamaica Superfund actions

I went to the "Navy" meeting at the Marriott Hotel. But no Navy people were there, actually. They have their engineering company handle everything, which I don't think is very effective.

The Navy's idea for a solution (as expressed by the engineering firm) is to cover the 25 acres to prevent water infiltration. That still leaves water infiltration from high tides (and perhaps progressively higher tides over the years) along the edges of the site that face the river. Riff-raff (a pile of stones) would prevent erosion of the site from tidewater, but not prevent leakage from the site into the river, or seepage of river water into the site and mixing of river water with pollutants, which would then flow back in to the Piscataqua.

SAPL is essentially saying what I just said, I believe.

Also: there has been very little testing for one of the most dangerous elements in the site: dioxin. I've contacted the Navy public information office and asked for all the information they have on the dioxin tests that have been done. There was some uncertainty about how many tests had been done and over what time frame. They thought the number was three and that one more test is scheduled soon. They were not able to direct me to any results. My understanding, though, is that dioxin is known to be present in the land fill.

I was surprised that so little attention seems to be given to the most potentially harmful toxics that could affect Maine and New Hampshire communities around the harbor. The engineering company was trying very hard to convey a sense that we are very high tech and everything is just fine.

There is also no information from the Navy engineer people about where the water table is under the 25 acres. And no thought that I have discovered about what the danger is of seepage by all sorts of contaminants in to ground water. Or where the ground water moves.

There was some exploration by the engineering company for barrels using metal detection equipment, but when I asked the engineers how much of the site was surveyed, they could not tell me. Boats were on part of the site for winter storage, and they couldn't survey that area, they said.

Some parts of the 25 acres give the metal detector overload signals and so they didn't dig to see what was there. It seems to me they should have done some checking while they were at it. I have the impression that the engineers are not doing a thorough job of looking for barrels that might contain really awful stuff that would rust over time and release their contents into the river. I wondered what incentive there was for the engineering firm to do a thorough job.

The EPA believes that any barrels have long since rusted out and washed their contents into the river, though the engineering company did find whole barrels in one part of the 25 acres, above the high tide

level. None of these contained toxics, they said. But I have the impression that the exploration for barrels at the site was perfunctory. I'd like to be wrong about that.

The State of Maine environmental office representative expressed the view that there should be more testing of the liquids that continue to flow from the site in to the river before a final design decision is made for dealing with the site. That seems to make sense to me. But the EPA has the final word on this, we were told.

My sense of this from a community perspective is that the Navy has a responsibility to find a way to contain the materials in the site, not allow them to flow into the river for years to come.

Regards- Andrew Pearson.

53 Pocahontas Road
Kittery Point, ME 03905
439 1835
whaleback@cybertours.com

APPENDIX C

OU3 ARARs AND COST ESTIMATE TABLES

APPENDIX C.1

ARARs

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Federal Chemical-Specific:				
Groundwater	Health Advisories, EPA Office of Drinking Water	To Be Considered	These advisories establishes short-term, long-term, and lifetime exposure limits for children and adults.	These advisories were used to document contaminant exceedances in groundwater (as part of the OU3 risk assessment).
Risk Assessment	EPA Risk Reference Doses (RfDs)	To Be Considered	RfDs are the concentrations considered unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure over a lifetime.	RfDs were used to estimate noncarcinogenic risks as part of the OU3 risk assessment.
Risk Assessment	EPA Human Health Assessment Group Cancer Slope Factors (CSFs)	To Be Considered	CSFs present the most up-to-date information on cancer risk potency for known and suspected carcinogens.	CSFs were used to estimate carcinogenic risks as part of the OU3 risk assessment.
State of Maine Chemical-Specific:				
Soil/Ground-water	Guidance Manual for Human Health Risk Assessments at Hazardous Substance Sites, June 1994	To Be Considered	This guidance manual prepared by the MEDEP and the Maine Department of Human Resources provides acceptable carcinogenic and noncarcinogenic risk levels (1×10^{-5} and 1, respectively).	This guidance manual was considered in determining acceptable risk levels for RAOs related to the protection of human health.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
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INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 2 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Federal Location-Specific:				
Other Natural Resources	Fish and Wildlife Coordination Act (16 USC 661 et seq.; 33 CFR 320; 40 CFR 6.302)	Relevant and Appropriate	This act requires any federal agency proposing to modify a body of water to consult with the U.S. Fish and Wildlife Service or National Marine Fisheries Service and appropriate state agencies if alteration of a body of water, including discharges of pollutants into a wetland or construction in a wetland, will occur as a result of off-site remedial activities. Consultation is strongly recommended for on-site actions.	Precautions will be taken to minimize the potential effect on fish and wildlife during construction and maintenance of the shoreline erosion controls.
Floodplains	Floodplain Management, Executive Order 11988 (40 CFR 6, Appendix A)	Applicable	Appendix A includes the federal policy on floodplain management. Under this order, federal agencies are required to avoid long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid support of floodplain development wherever there is a practicable alternative. If no practicable alternative exists to performing cleanup in a floodplain, potential harm must be mitigated and actions taken to preserve the beneficial value of the floodplain.	Implementation of this alternative will include construction in the floodplain. No practicable alternative to this construction exists. However, best management practices will be used during remedial activities to reduce any adverse impacts to the floodplain. The shoreline erosion controls will be constructed so that they do not adversely affect the floodplain and will ensure the bank is sufficiently stabilized to contain the waste materials.

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PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 3 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Floodplains	RCRA Floodplain Restrictions for Hazardous Waste Facilities (40 CFR 264.18(b))	Relevant and Appropriate	A hazardous waste facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood or result in no adverse effects on human health and the environment if washout were to occur.	The landfill cap will be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood and to result in no adverse effects on human health or the environment if washout were to occur.
Wetlands	Federal Protection of Wetlands, Executive Order 11990 (40 CFR 6, Appendix A)	Applicable	Appendix A includes the federal policy on wetlands protection. Under this order, federal agencies are required to minimize the destruction, loss, or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands. If no practicable alternative exists to remedial activity that may adversely affect a wetland, impacts from implementing the chosen alternative must be mitigated.	Implementation of this alternative will include construction in tidal wetlands. No practicable alternative to this construction exists. However, best management practices will be used during remedial activities to reduce any adverse impacts to wetlands. The shoreline erosion controls will be constructed so that they do not adversely affect wetlands and will ensure the bank is sufficiently stabilized to contain the waste materials.
Wetlands	CWA Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR 230;33 CFR 320-330)	Applicable	Section 404 of the CWA regulates the discharge of dredged or fill material into U.S. waters, including wetlands. The purpose of Section 404 is to ensure that proposed discharges are evaluated with respect to impacts on the aquatic ecosystem. No activity that adversely affects a wetland is permitted if a practicable alternative that has less effect is available. If there is no practicable alternative, impacts must be mitigated.	Remedial activities will involve dredged or fill material discharge to a tidal wetland. There is no practicable alternative to such discharge. However, the construction will be conducted to comply with these requirements.

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INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 4 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Wetlands	Coastal Zone Management Act (16 USC 1451 et seq.)	Applicable	This act provides for the preservation and protection of coastal zone areas. Federal activities that are in or directly affecting the coastal zone must be consistent to the maximum extent practicable with a federally approved state management program.	Implementation of this alternative will include construction in the coastal zone. However, best management practices will be used during remedial activities to reduce any adverse impacts to the coastal zone. The remedial action will be consistent with Maine Coastal Management Policies. The shoreline erosion controls will ensure the bank is sufficiently stabilized to contain the waste material.
Navigable Waters	River and Harbors Act (33 USC 403; 33 CFR 320-323)	Applicable	Section 10 of the River and Harbors Act prohibits unauthorized obstruction or alteration of navigable waters. Activities involving excavation or deposition of materials in navigable waters or affecting such waters must serve the public interest, and benefits must outweigh adverse impacts on natural resources, aesthetics, and navigation.	The shoreline erosion control work in the Piscataqua River (at OU3) will meet the substantive requirements of Section 10 of the Act to prevent obstruction or alteration of navigable waters.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
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PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 5 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
State of Maine Location-Specific:				
Wetlands	Maine Site Location of Development Law (38 MRSA 481 et seq.; 06-096 CMR 371-377)	Applicable	This statute and the related regulations prohibit any development from adversely affecting existing uses, scenic character or existing natural resources in or near a community. Remediation activities must not have adverse effect on the natural environment, historic sites, unusual natural areas, and wildlife and fisheries. Also, this act requires that activities shall not interfere with existing uses of the site.	Because the landfill cover will be more than 3 acres, this alternative will need to meet the substantive requirements of the statute and regulations. However, no adverse effects on the existing uses, scenic character, or existing natural resources will occur due to the construction of the cover.
Wetlands	Maine Natural Resources Protection Act (NRPA) Permit by Rule Standards (38 MRSA 480 et seq.; 06-096 CMR 305)	Relevant and Appropriate	This act requires a permit for any activity conducted in, on, or over any protected natural resource or any activity conducted on land adjacent to and operates in such a way that material or soil may be washed into any freshwater or coastal wetland, great pond, river, stream or brook.	Implementation of this alternative will include construction in tidal wetlands or the offshore. Remedial activities (grading/capping) will be performed in compliance with substantive requirements. Erosion and sediment controls will be included during implementation of the alternative. There will be little to no net loss of naturally vegetated areas after implementation of this alternative.
Wetlands	Maine Wetland Protection Rules (06-096 CMR 310)	Applicable	Standards are provided for wetlands protection. Activities that have an unreasonable impact on the wetlands are prohibited.	Implementation of this alternative will include construction in wetlands. However, the shoreline erosion controls will not adversely affect wetlands and will ensure the banks are sufficiently stabilized to contain the waste materials.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
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PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 6 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Coastal Zone	Maine Coastal Management Policies (38 MSRA 1801 et seq.)	Applicable	These policies provide for the regulation, conservation, beneficial use, and management of coastal resources.	The remedial action will be consistent with these policies. The shoreline reconstruction will ensure the bank is sufficiently stabilized to contain the waste materials.
Other Natural Resources	Maine Endangered Species Act (12 MRSA 7751 et seq.)	To Be Considered	The state of Maine has authority to research, list, and protect any species deemed endangered or threatened. The Maine Department of Inland Fisheries and Wildlife determines appropriate use(s) of various habitats on a case-by-case basis. The Maine lists may differ from the federal lists of endangered species.	No known endangered or threatened species or critical habitats are present at OU3. However, to prevent flushing of birds from their nests on Clark's Island, guidance from the Maine Department of Inland Fisheries and Wildlife to refrain from remedial activities from April 1 to August 15 within 0.25 miles of a nesting habitat will be considered.
Other Natural Resources	Maine Significant Wildlife Habitat Rules (06-096 CMR 335)	To Be Considered	These rules outline requirements associated with a NRPA permit for an activity impacting significant wildlife habitat, including certain seabird nesting islands.	No known endangered or threatened species or critical habitats are present at OU3. However, to prevent flushing of birds from their nests at Clark's Island, guidance from the Maine Department of Inland Fisheries and Wildlife to refrain from remedial activities from April 1 to August 15 within 0.25 miles of a nesting habitat will be considered.
Federal Action-Specific:				
Hazardous Waste	RCRA Subtitle C Standards for Owners and Operators of TSD Facilities (40 CFR 264)	Relevant and Appropriate	These regulations outline specifications and standards for design, operation, closure, and monitoring of performance for hazardous waste storage, treatment, and disposal facilities.	These regulations are relevant and appropriate, not applicable, because disposal of wastes at this site ceased prior to the promulgation of RCRA in 1980. However, substantive requirements will be met and adhered to on site.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 7 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Hazardous Waste	RCRA Subtitle C, Subpart F – Releases from Solid Waste Management Units (40 CFR 264.90-264.101)	Relevant and Appropriate	These regulations detail groundwater monitoring requirements for hazardous waste facilities. These regulations outline general groundwater monitoring standards, as well as standards for detection monitoring, compliance monitoring, and corrective action monitoring.	These regulations are relevant and appropriate, not applicable, because disposal activities at this site ceased prior to the promulgation of RCRA in 1980. However, the alternative will meet the substantive requirements of these regulations.
Hazardous Waste	RCRA Subtitle C, Subpart G – Closure and Post-Closure (40 CFR 264.110-264.120)	Relevant and Appropriate	These regulations detail general requirements for closure and post-closure of hazardous waste facilities, including installation of a groundwater monitoring program.	These regulations are relevant and appropriate, not applicable, because disposal activities at this site ceased prior to the promulgation of RCRA in 1980. However, design, monitoring, maintenance, and post-closure care will meet the substantive requirements of these regulations.
Hazardous Waste	RCRA Subtitle C, Subpart N – Landfills (40 CFR 264.310)	Relevant and Appropriate	This regulation contains closure and post-closure requirements for Subtitle C landfills.	This regulation is relevant and appropriate, not applicable, because disposal of wastes at this site ceased prior to the promulgation of RCRA in 1980. However, this alternative will meet the substantive requirements of this regulation with regard to cap design, monitoring, maintenance, and post-closure care.
Capping	Alternative Cap Design Guidance Proposed for Unlined, Hazardous Waste Landfills in the EPA Region I (memo dated 9/30/97)	To Be Considered	Guidance for design of a cover or cap for unlined, hazardous waste landfills in EPA Region I.	This guidance will be followed for design of the cap.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 8 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Capping	Amendment to Recommended Long Term Hydraulic Performance Criteria of the Geocomposite Drainage Layer in Landfill Cap Applications (memo dated 3/23/99)	To Be Considered	Guidance for testing long-term performance characteristics of a geocomposite drainage layer.	This guidance will be followed for design of the cap.
Groundwater	Safe Drinking Water Act (SDWA), Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16 and 141.60-141.65)	Relevant and Appropriate	MCLs have been promulgated for many common organic and inorganic contaminants. These levels regulate the concentration of contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers used for drinking water.	MCLs were used to document contaminant exceedances in groundwater (as part of the OU3 risk assessment). Until contaminant concentrations in the groundwater are below MCLs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.
Groundwater	SDWA Maximum Contaminant Level Goals (MCLGs) (40 CFR 141.50-141.51)	Relevant and Appropriate	MCLGs have been promulgated for many common organic and inorganic contaminants. These concentrations indicate the level of contaminants in drinking water at which no known or anticipated adverse effect on the health effect of a person would occur, allowing for an adequate margin of safety. MCLGs are non-enforceable public health goals.	Where MCLs have not been established, non-zero MCLGs were used to document contaminant exceedances in groundwater (as part of the OU3 risk assessment). Until contaminant concentrations in the groundwater are below non-zero MCLGs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 9 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Emissions	Air/Superfund National Technical Guidance (EPA/450/1-89/001 through 004)	To Be Considered	This guidance describes methodologies for predicting risks due to air release at a Superfund site.	Releases to air will be minimized by fugitive dust controls. Emissions of hazardous air pollutants are not anticipated.
State of Maine Action-Specific:				
Hazardous Waste	Maine Hazardous Waste Management Rules (06-096 CMR 800-802, 850, 851, 853-857)	Relevant and Appropriate	These regulations provide standards for the generation, transportation, treatment, storage, and disposal of hazardous waste. They set forth the state definition and criteria for establishing whether waste materials are hazardous and subject to associated hazardous regulations. They also provide standards for the location of facilities in a floodplain or within 300 feet of the floodplain and detail groundwater monitoring requirements for hazardous waste facilities. The regulations outline general groundwater monitoring standards, as well as standards for detection monitoring, compliance monitoring, and corrective action monitoring.	State requirements more stringent than federal requirements take precedence. At the completion of the remedial action, these remedial standards will be met under this alternative.
Emissions	Maine Air Pollution Control Law – Classification of Air Quality Control Regions (38 MSRA 583; 06-096 CMR 114)	Relevant and Appropriate	Air quality regions and classification of each region and ambient air quality and emission standards are established.	Emissions of criteria pollutants will be minimized by fugitive dust control during excavation, grading, and capping activities. Emissions of hazardous air pollutants are not anticipated during implementation of this alternative.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 10 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Emissions	Maine Ambient Air Quality Standards (38 MSRA 584; 06-096 CMR 110)	Relevant and Appropriate	Ambient air quality standards are established for particulate matter, sulfur dioxide, carbon monoxide, ozone, hydrocarbon, nitrogen dioxide, lead, and total chromium. Ambient increments that define the maximum ambient increase of a particular pollutant, which can be permitted for a given area, are defined.	Emissions of criteria air pollutants will be minimized by fugitive dust control during excavation, grading, and capping activities
Emissions	Maine Air Pollution Control Laws – Maine Emission License Regulations (38 MSRA 585 and 590; 06-096 CMR 115)	Relevant and Appropriate	Requires new sources of air emissions to demonstrate that its emissions do not violate ambient air quality standards. New sources must meet preconstruction monitoring and post-construction monitoring requirements.	Emissions of criteria air pollutants will be minimized by fugitive dust control during excavation, grading, and capping activities.
Groundwater	Maine Department of Human Services Rules Relating to Testing of Private Water Systems for Potentially Hazardous Contaminants (10-144E CMR 233, Appendix C)	Relevant and Appropriate	Maximum Exposure Guidelines (MEGs) are contained in Appendix C to these rules. MEGs include health advisories, which are maximum allowable concentrations of contaminants in drinking water.	Until contaminant concentrations in the groundwater are below MEGs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 11 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Groundwater	Maine Hazardous Waste Rules Relating to Performance Standards for Establishing, Constructing, Altering, and Operating Certain Types of Hazardous Waste Units (06-096 CMR 854)	Relevant and Appropriate	This requirements outlines the State of Maine's rules relating to establishing, constructing, altering, and operating certain types of hazardous waste units.	Until contaminant concentrations in the groundwater are below MEGs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.
Groundwater	Maine Department of Human Services Rules Relating to Drinking Water (10-144E CMR 231-233)	Relevant and Appropriate	Maine's primary drinking water standards are similar to federal MCLs as drinking water standards under the Maine Safe Drinking Water Rules. When state standards are more stringent that federal standards, and have been legally and constantly applied, the state levels shall be used.	Until contaminant concentrations in the groundwater are below Maine MCLs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.
Erosion	Erosion and Sedimentation Control (38 MRSA 420-C) and Stormwater Management (38 MSRA 420-D; 06-096 CMR 500 and 502)	Applicable	Erosion control measures must be in place before activities, such as filling, displacing, or exposing soil or other earthen materials occur. Prior MEDEP approval is required if the disturbed area is in the direct watershed of a water body most at risk.	Appropriate controls will be implemented to address erosion, sedimentation, and storm water and applicable plans will be coordinated with the MEDEP before implementation.
Waste	Maine Solid Waste Management Regulations (06-096 CMR 400-411)	To be Considered	Provides standards for generation, transportation, treatment, storage, and disposal of solid and special wastes. Also provides closure and post-closure maintenance standards.	Not applicable for a facility established before 1973. Capping performance standards are TBC for the conceptual cover design. The specific design standards are not appropriate for a landfill that has been closed since 1978.

APPENDIX C.2
COST ESTIMATES

CHECKED BY RMC / JLM
Date: 6-7-00 / 5-25-00

7/20/00; 10:25 AM

PORTSMOUTH NAVAL SHIPYARD
Kittery, Maine
JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

BY: TJR/NJB
Date: 10-14-99 / 5-25-00
CHECKED BY RMC / JLM
Date: 6-7-00 / 5-25-00

			Unit Cost				Extended Cost					
Item	Quantity	Unit	Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	Subtotal	Comments
9.5 Triplanar drainage net w/both sides of fabric	496,600	sf	\$0.63				\$312,858	\$0	\$0	\$0	\$312,858	call to GSE, 4/5/00
9.6 Purchase Fill to Grade to 2%	13,400	cy		\$5.05	\$0.38	\$0.76	\$0	\$67,670	\$5,092	\$10,184	\$82,946	
9.7 Haul Fill in 20 cy Trucks, 10 mile R/T	13,400	cy			\$1.61	\$5.10	\$0	\$0	\$21,574	\$68,340	\$89,914	
9.8 Place/Spread Fill	13,400	cy			\$0.31	\$0.84	\$0	\$0	\$4,154	\$11,256	\$15,410	
9.9 Compact Fill, 12" lifts w/ 2 passes	13,400	cy			\$0.06	\$0.07	\$0	\$0	\$804	\$938	\$1,742	
9.10 Purchase Subbase Fill, 18" thick minimum	27,600	cy		\$5.05	\$0.38	\$0.76	\$0	\$139,380	\$10,488	\$20,976	\$170,844	
9.11 Haul Fill in 20 cy Trucks, 10 mile R/T	27,600	cy			\$1.61	\$5.10	\$0	\$0	\$44,436	\$140,760	\$185,196	
9.12 Place/Spread Fill	27,600	cy			\$0.31	\$0.84	\$0	\$0	\$8,556	\$23,184	\$31,740	
9.13 Compact Fill, 12" lifts w/ 2 passes	27,600	cy			\$0.06	\$0.07	\$0	\$0	\$1,656	\$1,932	\$3,588	
9.14 Purchase Topsoil, 6" thick	9,200	cy		\$14.15	\$0.35	\$0.76	\$0	\$130,180	\$3,220	\$6,992	\$140,392	
9.15 Haul Soil in 20 cy Trucks, 10 mile R/T	9,200	cy			\$1.61	\$5.10	\$0	\$0	\$14,812	\$46,920	\$61,732	
9.16 Place/Spread Topsoil	9,200	cy			\$0.31	\$0.84	\$0	\$0	\$2,852	\$7,728	\$10,580	
9.17 Revegetation	55,000	sy		\$0.30	\$1.09	\$0.22	\$0	\$16,500	\$59,950	\$12,100	\$88,550	
10 ASPHALT CAP WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER												
10.1 Geotextile, 8 ox. Nonwoven	48,000	sy		\$0.62	\$0.35	\$0.03	\$0	\$29,760	\$16,800	\$1,440	\$48,000	call to GSE, 4/5/00, \$.62/sf call to GSE, 4/5/00, \$.63/sf
10.2 Place/Spread Barrier Soil	16,000	cy			\$0.31	\$0.84	\$0	\$0	\$4,960	\$13,440	\$18,400	
10.3 Compact Barrier Soil, 12" lifts w/ r passes	16,000	cy			\$0.12	\$0.21	\$0	\$0	\$1,920	\$3,360	\$5,280	
10.4 VFPE Liner, 60 mil	431,000	sf	\$0.62				\$267,220	\$0	\$0	\$0	\$267,220	
10.5 Triplanar drainage net w/ both sides of fabric	431,000	sf	\$0.63				\$271,530	\$0	\$0	\$0	\$271,530	
10.6 Purchase Fill to Grade to 2%	12,800	cy		\$5.05	\$0.38	\$0.76	\$0	\$64,640	\$4,864	\$9,728	\$79,232	
10.7 Haul Fill in 20 cy Trucks, 10 mile R/T	12,800	cy			\$1.61	\$5.10	\$0	\$0	\$20,608	\$65,280	\$85,888	
10.8 Place/Spread Fill	12,800	cy			\$0.31	\$0.84	\$0	\$0	\$3,968	\$10,752	\$14,720	
10.9 Compact Fill, 12" w/2 passes	12,800	cy			\$0.06	\$0.07	\$0	\$0	\$768	\$896	\$1,664	
10.10 Purchase Subbase Fill, 12" thick minimum	16,000	cy		\$5.05	\$0.38	\$0.76	\$0	\$80,800	\$6,080	\$12,160	\$99,040	
10.11 Haul Fill in 20 cy Trucks, 10 mile R/T	16,000	cy			\$1.61	\$5.10	\$0	\$0	\$25,760	\$81,600	\$107,360	
10.12 Place/Spread Fill	16,000	cy			\$0.31	\$0.84	\$0	\$0	\$4,960	\$13,440	\$18,400	
10.13 Compact Fill, 12" lifts w/ 2 passes	16,000	cy			\$0.06	\$0.07	\$0	\$0	\$960	\$1,120	\$2,080	
10.14 Geotextile, 8 ox. Nonwoven	48,000	sy		\$0.62	\$0.35	\$0.03	\$0	\$29,760	\$16,800	\$1,440	\$48,000	
10.15 Gravel Subbase, 12" thick	48,000	sy		\$11.60	\$0.43	\$0.86	\$0	\$556,800	\$20,640	\$41,280	\$618,720	
10.16 Base Course, 1 ½" thick	48,000	sy	\$2.91				\$139,680	\$0	\$0	\$0	\$139,680	
10.17 Wearing Course, 1 ½" thick	48,000	sy	\$3.37				\$161,760	\$0	\$0	\$0	\$161,760	
11 GAS VENTS												
11.1 Gas Vent installation WL (14 at 20' each)	280	if	\$35.00				\$9,800	\$0	\$0	\$0	\$9,800	
11.2 Gas Vent Stick-up and Hood	14	ea	\$550.00				\$7,700	\$0	\$0	\$0	\$7,700	
11.3 Gas Vent Development	50	hr	\$35.00				\$1,750	\$0	\$0	\$0	\$1,750	
11.4 Collect/Containerize IDW and Soil	12	ea	\$50.00				\$600	\$0	\$0	\$0	\$600	
11.5 Transport/Dispose IDW and Soil Off Site	12	drums	\$150.00				\$1,800	\$0	\$0	\$0	\$1,800	
12 PERIMETER SECURITY/ACCESS ROAD												
12.1 Excavate/Haul Existing Road	2,630	cy			\$2.86	\$4.07	\$0	\$0	\$7,522	\$10,704	\$18,226	2 mile R/T place on site bank run gravel 1 ½" crush stone
12.2 Backfill/Compact Material	2,630	cy			\$0.99	\$1.27	\$0	\$0	\$2,604	\$3,340	\$5,944	
12.3 Gravel Subbase Course, 10" thick	1,370	sy		\$13.80	\$0.87	\$1.39	\$0	\$18,906	\$1,192	\$1,904	\$22,002	
12.4 Gravel Base Course, 6" thick	4,940	sy		\$5.80	\$0.30	\$0.60	\$0	\$28,652	\$1,482	\$2,964	\$33,098	
12.5 Asphalt Base Course, 1 ½" thick	4,940	sy	\$2.91				\$14,375	\$0	\$0	\$0	\$14,375	
12.6 Asphalt Wearing Course, 1 ½" thick	4,940	sy	\$3.37				\$16,648	\$0	\$0	\$0	\$16,648	
13 CONSTRUCTION OVERSIGHT												
13.1 Professional Oversight (6 p * 5 days * 52 weeks)	1,560	MD			\$320.00		\$0	\$0	\$499,200	\$0	\$499,200	\$20.00 per hr / 8 hrs per day
Subtotal Direct Costs less Subcontract								\$1,656,281	\$1,236,500	\$1,115,306	\$4,008,087	
Local Area Adjustments								92.0%	96.5%	96.5%		
								\$1,523,778	\$1,193,222	\$1,076,271	\$3,793,271	
Overhead on Labor Cost @ 30%									\$357,967		\$357,967	
G & A on Labor Cost @ 10%									\$119,322		\$119,322	
G & A on Material Cost @ 10%								\$152,378			\$152,378	
Total Direct Cost								\$1,676,156	\$1,670,511	\$1,076,271	\$4,422,938	
Indirects on Total Direct Labor Cost @ 50%									\$835,256		\$835,256	
Profit on Total Direct Cost @ 10%											\$442,294	

PORTSMOUTH NAVAL SHIPYARD
Kittery, Maine
JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

BY: TJR/NUB
Date: 10-14-99 / 5-25-00
CHECKED BY RMC / JLM
Date: 6-7-00 / 5-25-00

Item	Quantity	Unit	Subcontract	Unit Cost			Subcontract	Extended Cost			Subtotal	Comments
				Material	Labor	Equipment		Material	Labor	Equipment		
Subtotal											\$5,700,488	
		Health & Safety Monitoring @ 1%	(Includes Subcontractor cost)								\$79,488	
Total Field Cost											\$5,779,975	
		Subtotal Subcontractor Cost					\$2,248,273				\$2,248,273	
		G & A on Subcontract Cost @ 10%					\$224,827				\$224,827	
		Profit on Subcontractor Cost @ 5%									\$112,414	
Subcontractor Cost											\$2,585,514	
Contingency on Total Field and Subcontractor Costs @ 15%											\$1,254,823	
Engineering on Total Field Cost @ 10%											\$577,996	
TOTAL COST											\$10,198,310	

PORTSMOUTH NAVAL SHIPYARD

Kittery, Maine

JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring Operation and Maintenance Costs

Item	Qty	Unit	Unit Cost	Subtotal Cost	Notes
1 Wetland Maintenance	1	ea	\$55,000.00	\$55,000	Inspect and replace 25% of plants (Year 1)
2 Soil Cap Maintenance	1	ea	\$2,800.00	\$2,800	(Years 1-30)
3 Asphalt Cap Maintenance	1	ea	\$5,000.00	\$5,000	Patch Pavement (Years 1-9, 11-19, 21-29)
4 Asphalt Cap Maintenance	1	ea	\$11,850.00	\$11,850	Repair Pavement Cracks (Years 5, 15, 25)
5 Asphalt Cap Maintenance	1	ea	\$45,120.00	\$45,120	Clean & Seal Pavement (Years 5, 15, 25)
6 Asphalt Cap Maintenance	1	ea	\$167,040.00	\$167,040	Repave Cap, 1 ½" thick (Years 10, 20, 30)
Total Cost Year 1				\$62,800	
Total Cost Years 2-4, 6-9, etc.				\$7,800	
Total Cost Years 5, 15, 25				\$64,770	
Total Cost Years 10, 20, 30				\$169,840	

PORTSMOUTH NAVAL SHIPYARD**Kittery, Maine****JILF - OU3 FS****Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring Annual Sampling Costs**

Item	Item Cost Annually ⁽²⁾	Item Cost Annually ⁽³⁾	Item Cost Every 5 Years	Notes
Sampling ⁽¹⁾	\$7,725	\$5,725		Labor, Mobilization/Demobilization, Field Supplies
Groundwater Analysis	\$9,840	\$9,840		Analyze 16 samples for VOC, SVOC, & Metals. Analyze 8 samples for pesticides.
Surface water/Seep Analysis	\$14,000	\$14,000		Analyze 10 unfiltered + 10 filtered samples through 0.2 um filter for SVOCs, metals and pesticides/PCBs.
Sediment Analysis	\$42,300	\$42,300		Analyze 30 samples (15 per event twice a year) for metals, PAHs, pesticides, PCBs, and limited number of dioxins
Validation+Report	\$15,000	\$15,000		
Site Review			\$12,000	Review of documents, wetlands inspections, and data evaluation/recommendations
TOTALS	\$88,865	\$86,865	\$12,000	

(1) Sampling crew years 1-5 from out of town, years 6-30 local.

(2) Sampling would occur annually for the years 1 - 5.

(3) Sampling would occur annually for years 6 - 30.

PORTSMOUTH NAVAL SHIPYARD

Kittery, Maine

JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring Present Worth Analysis

Year	Capital Cost	Operation & Maintenance Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 7%	Present Worth
0	\$10,198,310			\$10,198,310	1.000	\$10,198,310
1		\$62,800	\$88,865	\$151,665	0.935	\$141,807
2		\$7,800	\$88,865	\$96,665	0.873	\$84,389
3		\$7,800	\$88,865	\$96,665	0.816	\$78,879
4		\$7,800	\$88,865	\$96,665	0.763	\$73,755
5		\$64,770	\$100,865	\$165,635	0.713	\$118,098
6		\$7,800	\$86,865	\$94,665	0.666	\$63,047
7		\$7,800	\$86,865	\$94,665	0.623	\$58,976
8		\$7,800	\$86,865	\$94,665	0.582	\$55,095
9		\$7,800	\$86,865	\$94,665	0.544	\$51,498
10		\$169,840	\$98,865	\$268,705	0.508	\$136,502
11		\$7,800	\$86,865	\$94,665	0.475	\$44,966
12		\$7,800	\$86,865	\$94,665	0.444	\$42,031
13		\$7,800	\$86,865	\$94,665	0.415	\$39,286
14		\$7,800	\$86,865	\$94,665	0.388	\$36,730
15		\$64,770	\$98,865	\$163,635	0.362	\$59,236
16		\$7,800	\$86,865	\$94,665	0.339	\$32,091
17		\$7,800	\$86,865	\$94,665	0.317	\$30,009
18		\$7,800	\$86,865	\$94,665	0.296	\$28,021
19		\$7,800	\$86,865	\$94,665	0.277	\$26,222
20		\$169,840	\$98,865	\$268,705	0.258	\$69,326
21		\$7,800	\$86,865	\$94,665	0.242	\$22,909
22		\$7,800	\$86,865	\$94,665	0.226	\$21,394
23		\$7,800	\$86,865	\$94,665	0.211	\$19,974
24		\$7,800	\$86,865	\$94,665	0.197	\$18,649
25		\$64,770	\$98,865	\$163,635	0.184	\$30,109
26		\$7,800	\$86,865	\$94,665	0.172	\$16,282
27		\$7,800	\$86,865	\$94,665	0.161	\$15,241
28		\$7,800	\$86,865	\$94,665	0.150	\$14,200
29		\$7,800	\$86,865	\$94,665	0.141	\$13,348
30		\$169,840	\$98,865	\$268,705	0.131	\$35,200
TOTAL PRESENT WORTH						\$11,675,580